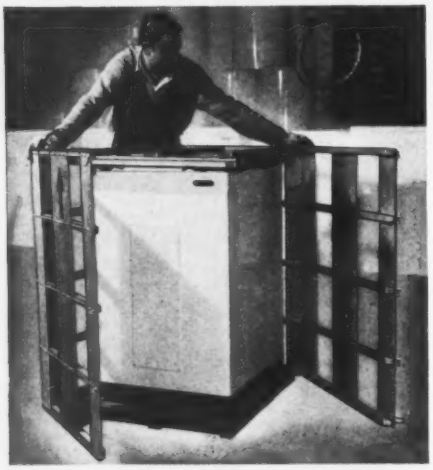
WESTERN INDUSTRY

• This electronically operated mechanical ice man is Santa Fe's bid for the "reefer" business. For details see page 5.

IN THIS ISSUE: *Decrease Your Labor Cost, Hold High Quality by Simplifying; Low Ductile Alloys Form Complex Shapes, Using New Technique; To Make Your Plant a Production Machine, Engineer Its Design; Moving Machines Cheaper Than Moving Goods, on Short Runs; Unique Salvage Operation Saves Company $1,000,000 Yearly; Congressional Thinking on Labor Legislation Revealed*

Thirty-Five Cents VOLUME XIV NUMBER 11 **November, 1949**

Step 1. Heater is lowered onto container base.



Step 2. Top in place and wrap-around goes on.

Step 3. Zip! Wrap-around is closed, ready to ship!

SAVES TIME!

CABCO ALL-BOUND CONTAINERS REDUCE PACKING TIME 50% FOR ELECTRIC HEATER MANUFACTURER

Wesix Electric Heater Company of San Francisco says Cabco all-bounds cut their packing time 50% on new Wesix table-top water heaters. Compact, 3-piece Cabco all-bounds have replaced costly 24-piece nailed crates and eliminated laborious assembly by hand. Now the Company packs its 30-gallon heater in 8 minutes or less. The Cabco containers also save Wesix 13% on shipping weight. And their open construction permits quick identification of the product inside.

IN MANY INDUSTRIES...

from the fruit and produce business to the manufacture of heavy machine parts . . . shippers are taking advantage of the multiple benefits found in Cabco all-bounds. These modern Cabco containers give excellent product protection, weigh less, stack and store in minimum space, are easy to handle, and fold together in minutes without hammer or nails. Cabco containers are made by the West's oldest, foremost manufacturer of wooden containers.

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CABCO CONTAINERS

THIS IS OUR 66TH YEAR

CALIFORNIA BARREL COMPANY, LTD.

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This enlargement represents a 1/16" dot of fabric in a 51-gauge stocking. It shows the loop formation that provides such great elasticity.
Did you know? that in "20-denier" sheer nylon hose, the diameter of the yarn is .00197".
Did you know? that in a "51-gauge" stocking, each square inch of main leg fabric consists of 3536 loops.

It takes 1,568,586 loops (AND FORTY MINUTES) to make a single 51-gauge stocking

High-Production Full-Fashioned Knitting Machines, 52'9" long and capable of knitting thirty stocking blanks simultaneously, are produced by the Textile Machine Works, Reading, Pa. With a total of 14,280 needles, each of its thirty sections lays a course of 476 loops in less than a second . . . yet it takes close to forty minutes to knit the one-and-a-half million loops required for a single 51-gauge stocking blank.

With so many moving parts, it wasn't easy to obtain the necessary smoothness of operation at high speeds. Precision, balance and long-wearing-and-bearing qualities had to be built into each of the machine's components—420 of which are made of twelve different Anaconda Extruded and Drawn Brass Shapes.

These shapes, made of wrought metal, are tough, strong, dense-grained and smooth-surfaced, with cutting characteristics that make them ideal for such precision-machined parts as those illustrated below. Besides, these parts are now being produced at a saving of 25 to 30% over the cast-brass sections they replaced.

The cost-paring advantages of Anaconda Extruded and Drawn Shapes are not limited to the textile industry. Produced in copper, brass, bronze or special copper alloys, they are available in an infinite variety of cross-sections. For further information, write to The American Brass Company, General Offices: Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Ontario. 49109

Three-quarter size cross-section of shapes before machining.
These four finished machine parts, about three-quarters actual size, are representative of the twelve Anaconda Extruded and Drawn Shapes used in the machines at right. As an indication of the accuracy required, the "Movable Knock-over Bit Bar" at left has 476 parallel slots milled in fourteen linear inches. Slot width: .0055". Slot tolerance: +.0005" —.000".
ANACONDA
EXTRUDED SHAPES

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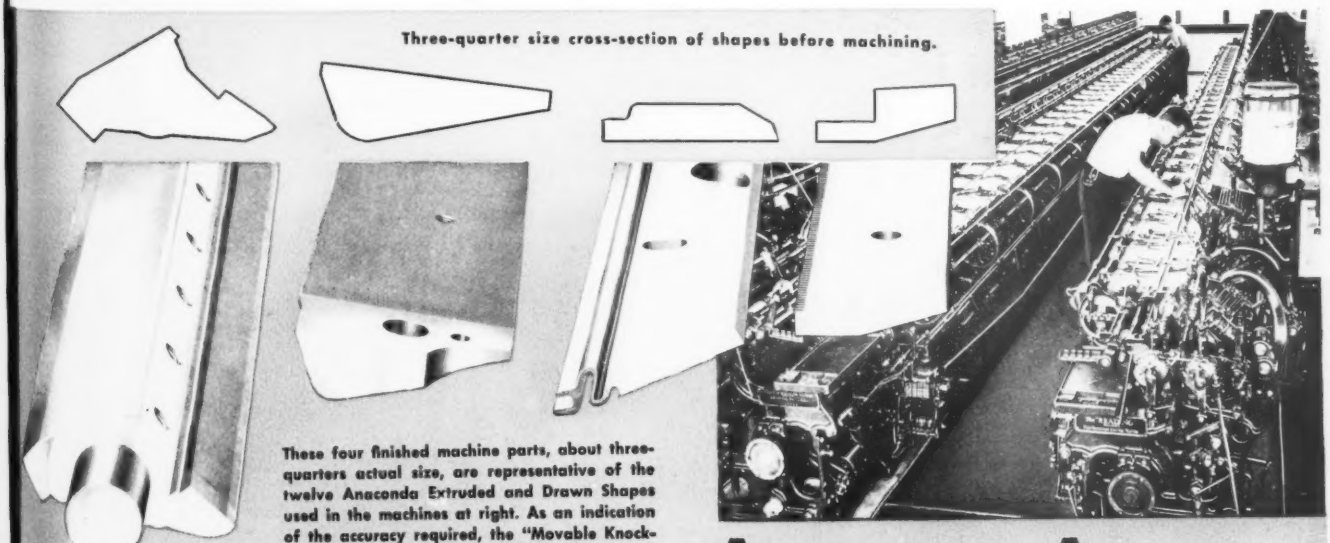

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ANACONDA
EXTRUDED SHAPES

There's nothing skin-deep about the beauty of this lamp

Too bad we don't have X-ray eyes . . . we'd be spared the disappointment of learning, too late, that the things we thought were solid brass—are not.

Not so with the "China-Brass" lamp illustrated above. It's typical of the entire line of solid brass table lamps, floor lamps, and smokers made by the Oxford Metal Spinning Co., Inc. of Philadelphia, one of the country's foremost lamp designers and manufacturers.

As a purchaser, you'd be well pleased with its handcrafted beauty—the durability of its solid brass construction—and, of course, its moderate price.

As its manufacturer, you'd quickly recognize the economy of using solid brass for its metal components. For in this plant—which annually produces hundreds of *different* patterns, shapes, and designs—not a single stamping or drawing die can be found. Instead, coils of Anaconda Spinning Brass are sheared to squares, centerpunched, cut to circles, and spun by hand. In this way, several hundred duplicates of an original design can be completed before a toolmaker could get halfway through a set of dies. Savings are passed on to the customer.

Using brass of just the right composition, grain size and temper is an important part of this low-cost, high-quality program. That's why "Oxford" consistently specifies "Anaconda Brass"—made by The American Brass Company, General Offices, Waterbury 20, Connecticut. In Canada: Anaconda American Brass Limited, New Toronto, Ontario.

Discs of Anaconda Sheet Brass and cut-to-length sections of Anaconda Seamless Tubes are used exclusively in spinning the Oxford lamp components illustrated.

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Editorial Page

Editorial Comment 13
Counter-Intelligence Vital
Timely Warning
Mail Box 13
Editor's Field Book 17
Calendar of Meetings 19

The Western Outlook . . . Statistics 21

Articles

Decrease Your Labor Cost, Hold High Quality by Simplifying . . 31
Low Ductile Alloys Form Complex Shapes, Using New Technique . 35
To Make Your Plant a Production Machine, Engineer Its Design . 38
Raise Production by Gearing Your Policy to Employee Response . 42
Technical Shorts 45
Materials Handling:
Moving Machines Cheaper Than Moving Goods, on Short Runs 48
Unique Salvage Operation Saves Company $1,000,000 Yearly . 50
New Process for Plywood Molding Trims Competition . . . 52
Labor and the Industrial West:
Congressional Thinking on Labor Legislation Revealed at Tahoe 54

Regional Reviews

Tehachapi to Tijuana 58
Sierras to the Sea 62
Olympics to the Coeur d'Alenes 72
Columbia Empire 66
The Continental Divide 76
The Wasatch Front 80

Departments

Westerners at Work 90
The West on Its Way 82
Trade Winds 94
New Methods 68
Helpful Literature 70
Book Reviews 71

Advertisers' Index 100

Front Cover

This icing machine moves along rails twelve feet apart, atop the icing dock at Bakersfield, California. Ice is pulled into machine from conveyor chain and up another conveyor to a crusher, then chuted to refrigerator cars. By this unique mechanized method, Santa Fe's "reefers" can be iced in ninety seconds.

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MODEL No. RA-6-1 5/8" — SHOP No. — DEPT. No. 101

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			1. HEADSTOCK RESERVOIR	GG. VACTRA OIL HEAVY MEDIUM	CHECK DAIL
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General Petroleum representative Staff Sadler (left) talks over the benefits of plastic-card lubrication system with R. E. McClintock, plant engineer of Menasco Manufacturing Co. Card fastened on machine at center specifies lubricant and frequency of service required.

"Lube Service that makes sense"

"G. P.'s new lubrication cards simplify equipment maintenance"

These are comments made by R. E. McClintock, Plant Engineer at Menasco Manufacturing Co., about General Petroleum's plastic card lubrication system. This system takes the guesswork and slip-ups out of the complicated problem of industrial plant lubrication. It starts with a complete lubrication study of your plant by an experienced General Petroleum lube-engineer. An overall plant lubrication plan is formulated which takes full consideration of storage and dispensing problems as well as the manufacturer's recommendations and operational factors. Each machine is then provided with a durable and cleanable plastic card giving full lubrication instructions. Fixed to the machine, these cards give your maintenance crew an easy reference to frequency of lubrication and assure the use of the right product.

Menasco Manufacturing Co. have been General Petroleum customers for 10 years. One of the country's largest manufacturers of aircraft landing struts, they mass-produce a precision product to extremely close tolerances. The dependability of lubricants and cutting oils is a major factor in their operation.

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For every pressure and temperature condition ...CRANE piping meets the need

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Take This Pressure Reducer Station, for example. Here Crane piping equipment meets the need just as it does for any power, process or general service installation. For the Crane line of valves, fittings, pipe and accessories is the world's most complete. You can select everything from one catalog . . . get everything on one order to your local, well-stocked Crane Branch or Wholesaler.

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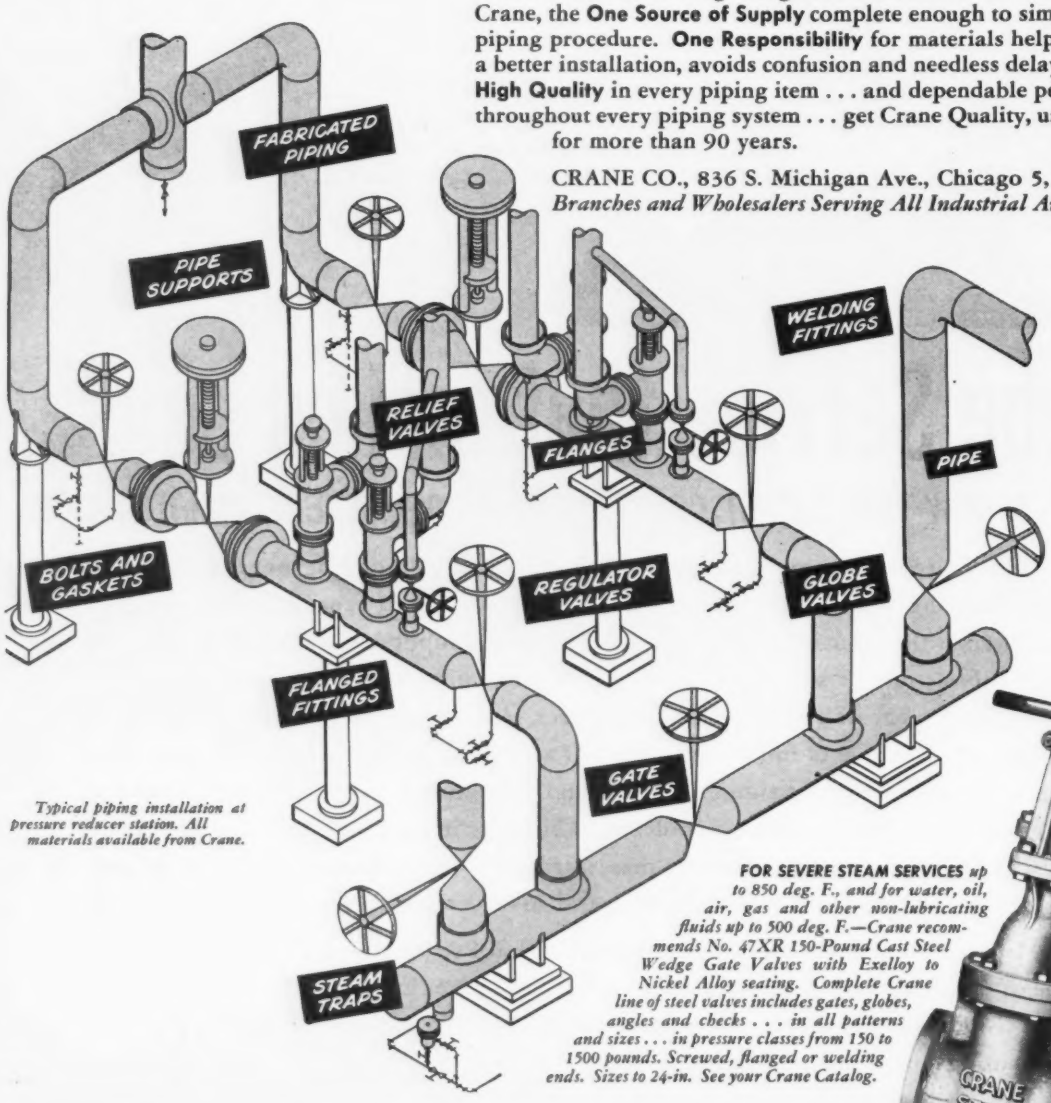
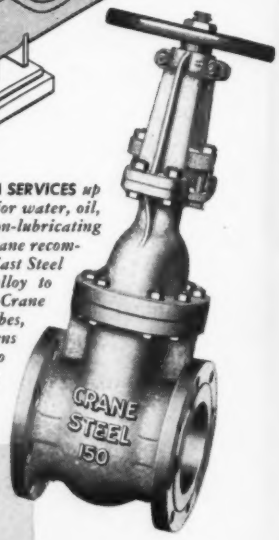


Typical piping installation at pressure reducer station. All materials available from Crane.



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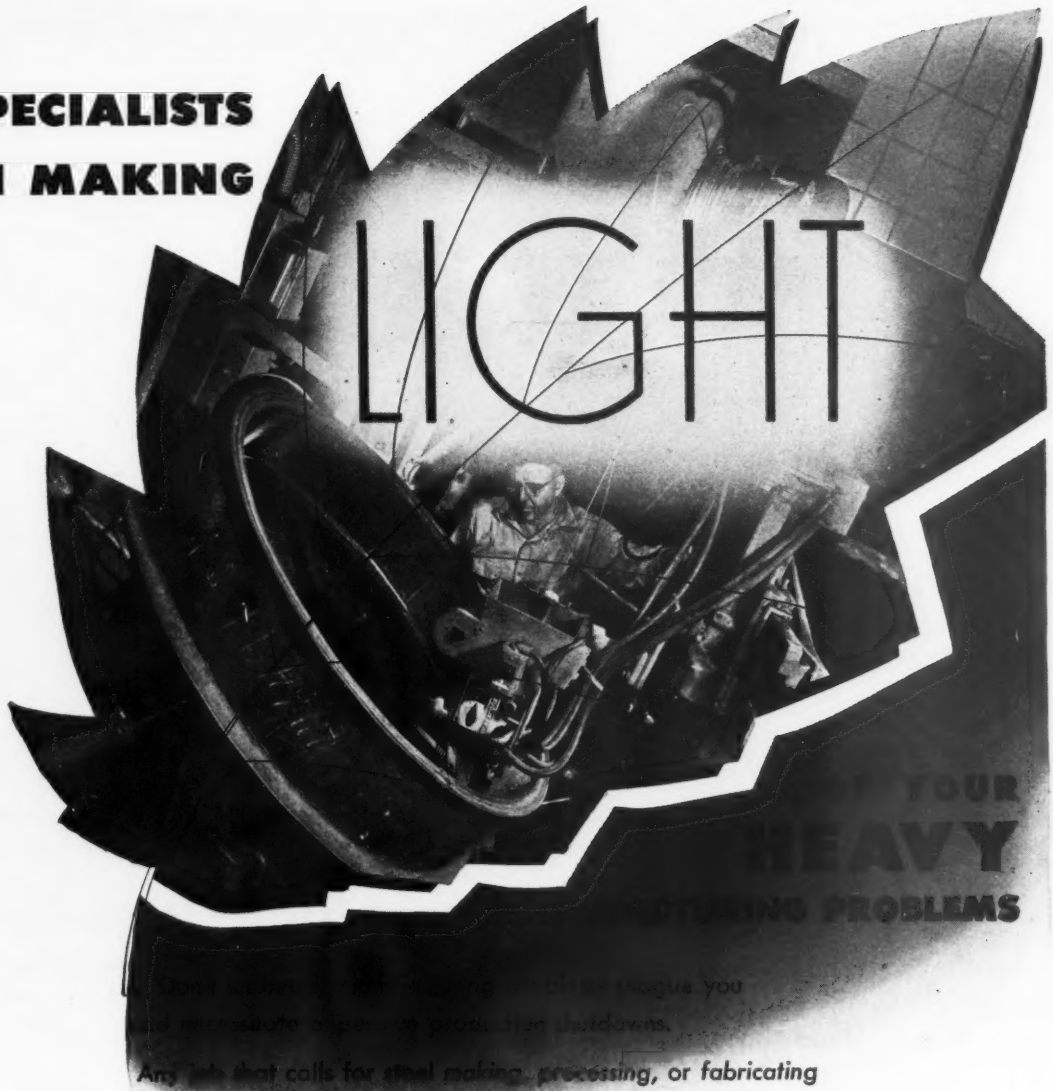

Any job that calls for steel making, processing, or fabricating can be handled here at California's largest completely integrated machinery manufacturing plant.

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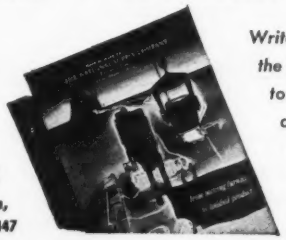

Write today for your free copy of the booklet "From Melting Furnace to Finished Product". It describes and illustrates the manufacturing and testing facilities available at National.

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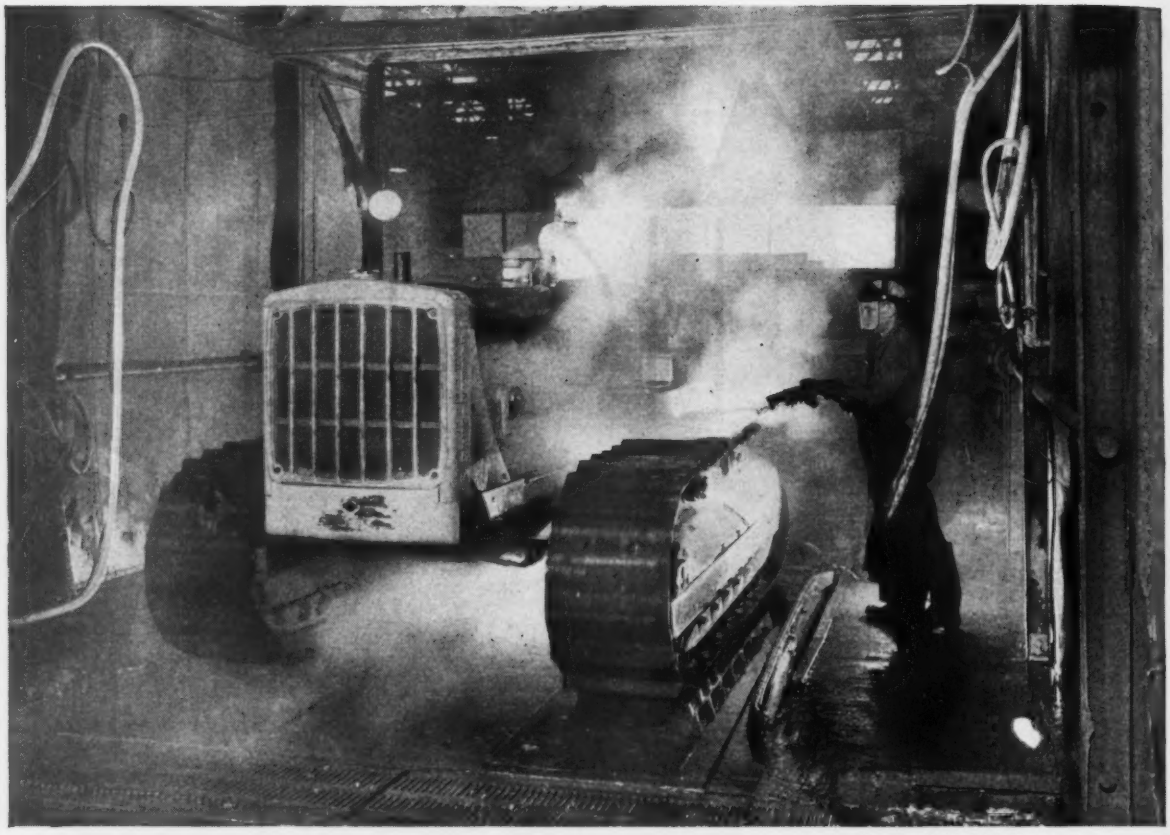

Courtesy of Caterpillar Tractor Co.

Republic Steams "Caterpillar" Diesels

. . . Republic Hose is used in every industry

Tough "Caterpillar" Diesel Tractors are perfectly groomed.

Each one is blasted by steam before the final protective paint dresses them up and protects their hides. Republic's Steam Hose is used for this cleaning job, and Caterpillar Tractor Co. has found Republic Rubber's E-101 Steam Hose to be highly satisfactory in maintaining the production schedule of its products.

"I am not surprised," says Mr. John H. Flora, president of Hagerty Brothers Company, the Republic Distributor in Peoria, Illinois. He knows that Republic Rubber Products are built ruggedly, and it just seems natural to him that these tough tractors should be serviced by Republic's sturdy E-101 Hose.

The body of Republic Steam Hose is constructed with plies of strong, insulated hard-woven duck which is applied on a bias for maximum pressure resistance and flexibility. The thick heat-resisting tube retains its flexibility under severest conditions. A tough, abrasion-resistant cover protects the hose from service wear and unusual punishment.

Republic, 47 years experienced, serves all industries and is qualified to aid *you* in any problem concerning Mechanical Rubber Goods.

Look in the classified section of your telephone directory for your local Republic Distributor's name, or write direct.

Mr. John H. Flora, Pres. & Treas. Hagerty Brothers Company Peoria, Illinois

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LEE RUBBER & TIRE CORPORATION, YOUNGSTOWN, OHIO

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MECHANICAL RUBBER GOODS BY

REPUBLIC RUBBER DIVISION

Each step a safe step—scientifically designed U·S·S Multigrip floor plate gives maximum skid resistance from every angle... even after years of use. And it adds the strength of steel to the flooring, permanently.

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From any angle, Multigrip floor plate is the modern way to surface a floor where safety is a factor. Practical, comfortable Multigrip is easy to install, easy to clean, provides easy traction for wheeled vehicles... always with top safety.

Among its many uses are factory aisles, of course ...and ramps, fire escapes, sidewalk openings, steps and platforms, expansion joints. The possibilities are almost endless. And users have found Multigrip increases employee efficiency as it increases comfort and safety. Multigrip reduces maintenance cost... Multigrip wears and wears and keeps on wearing.

Columbia, as Western producing member of United States Steel, combines its own modern facilities with those of others in the U·S·S family to supply the West with everything in steel. For information on Multigrip or any other steel product, contact your nearest Columbia office or write Columbia Steel Company, Room 1422, Russ Bldg., San Francisco 4, California.

USS

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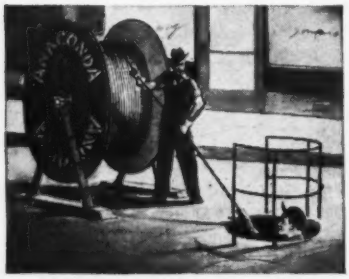
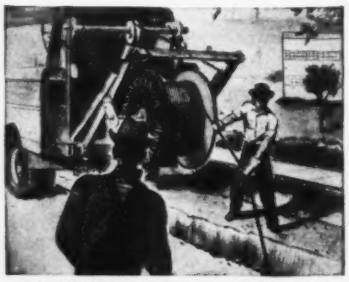
UNITED STATES STEEL

IN THE AIR—In single or grouped conductors, Durasheath truly provides the one-type cable for all-type use.



IN CONDUIT—Moisture, oil, acid resistance of neoprene jacket make Durasheath an ideal cable for this application.



UNDERGROUND—Toughness of neoprene jacket assures long life of Durasheath when installed directly in the ground.

For power distribution between farm buildings, in street lighting systems, airports, mines, industrial plants, railroad signal systems, real estate developments—to mention a few—Durasheath gives you a *run* for your money. You can use Durasheath in a continuous run that is partly underground, in conduit and in the air. Here's why:

Tough neoprene jacket is *unaffected by electrolysis,* corrosion and extremes in temperature.

Greater flexibility makes handling easier.

It's rugged: high resistance to oils, flame, abrasion, cutting, impact and the moisture, acids and alkalies found in the soil.

Specify Durasheath: available in small sizes or large, single or multi-conductor, to carry from 0 to 5,000 volts.

Durasheath

ANACONDA WIRE & CABLE COMPANY

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ANACONDA

IN OUR MAILBOX

International Interest

Editor, Western Industry:

In your August issue there appeared an article on our new Dual Newsprint Handling Device. The effect of this article was outstanding. Inquiries from Italy, England, Canada, and numerous eastern cities have been received. Furthermore, each day brings more correspondence regarding the Paper Clamp from cities throughout the country and Canada.

We wish to thank the staff of "Western Industry" who made it possible for this article to appear.

ELLETT G. HORSMAN
Assistant Vice President
Marine Terminals Corporation
San Francisco

That's a Good Question

Editor, Western Industry:

I feel very grateful to Mr. Hinckley of General Water Heater for taking the time to convey his comments on my question as to why water heaters should not be built square instead of round. (See Mailbox, September issue, *Western Industry*).

As you know, my talk in Los Angeles was written from the standpoint of a non-technical outsider looking at present equipment from the standpoint of a purchaser and was intended with only one thought in mind. Namely, to get manufacturers of any appliance to constantly ask themselves "why does it have to be built this way." I know that there are many difficulties involved in changing designs and I know that the costs are usually high. Some changes can be made now, others will have to wait, but none that will improve the acceptableness of our product should be lost sight of.

I think we should all be constantly asking ourselves why we do things the way we do them, and I think a manufacturer of a product, no matter whether it be a gas appliance or a household utensil, should constantly challenge himself with the sometimes embarrassing question, "why does it have to be done this way."

I hope you will not construe this as any criticism of the manufacturing of gas appliances because they are doing a splendid job for our industry, but I have found many women who have legitimately complained that too many men are designing equipment for women to use. Perhaps these women could steer us towards simple solutions to problems which may now hamper the sale of our merchandise. Most of them are unhampered by thoughts of mechanical difficulties or production problems and can go straight to the point in showing the improvements that could be made that will make any product more acceptable to the user who at some time must sit as judge and jury when the decision is made as to how many hard-earned dollars are to be spent for a given product.

H. VINTON POTTER
Coordinator of Promotion
American Gas Association
New York 17, N. Y.

EDITORIAL COMMENT

Counter-Intelligence Vital

AT the recent convention of the Pacific Coast Gas Association at Santa Barbara, the outgoing president, Arthur F. Bridge of Southern Counties Gas Company, recalled the fact that at the first convention of the association back in 1894 one of the convention topics was "The Electric Light; Friend or Foe?"

"You all know the answer to that one," he added, when the merriment subsided. But the rest of the convention at Santa Barbara saw much attention called to competition from electricity never dreamed of in 1894, such as ranges and water heaters. The narrowing differential in price between electric and gas ranges was noted, $375 for the former and $325 for the latter in the case of good ranges, and $285 against $250 for the average stove. In the household refrigerator field, there is only one manufacturer (Servel) of a gas unit, as compared to probably a dozen or more firms turning out electric boxes who are hotly competitive of each other, but all united on one point—the superiority of electricity.

There seems to be a lesson in this situation for all industries, namely, the desirability of setting up some permanent facility for the sole purpose of studying competitive forms of service and formally bringing it to the attention of the industry served.

In the case of gas, it would seem desirable for the industry to promote the development of additional makes of gas refrigerators, even though it might seem like a temporary hardship to Servel. In the long run it would mean more gas refrigerators used, and probably would actually increase Servel's volume. The situation is not unlike that of the air-cooled Franklin automobile, which was suffocated under the pressure of water-cooled automobiles.

Even the railroads, long so contemptuous of their competitors, have seen this point. The Association of American Railroads has delegated to one of its top-notch research men the sole task of studying competitive forms of transportation.

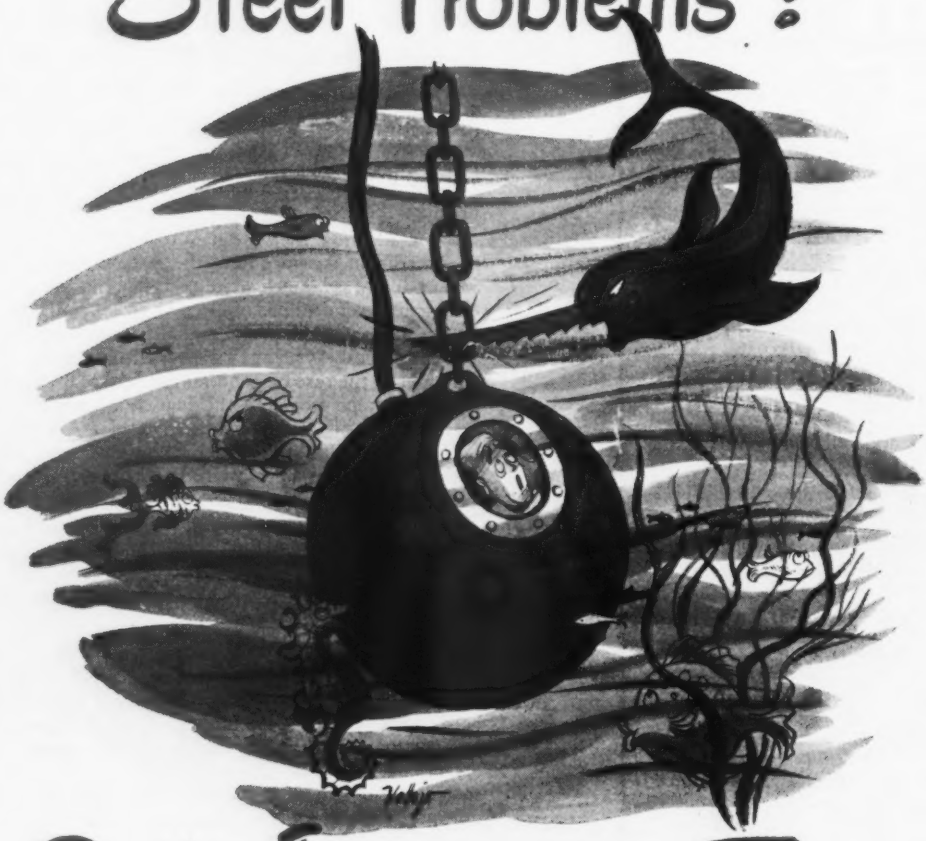
Timely Warning

A LOT of Westerners seem to be selling the West short, at a time when discerning Easterners think it is an opportune occasion to get into business out here, according to T. S. Peterson, president of Standard Oil Company of California. In an address prepared by him for delivery at the Controllers Institute of America convention in San Francisco, he said, referring to the West's tremendous population growth in the last decade:

"Strangely enough, many of our Western people have failed to comprehend fully the significance of this vast population increase and the important role they are destined to play in the nation's economy.

"Some of our people are selling their businesses to discerning Easterners—to buyers who can see no stopping an area which for the last eight years has accounted for 36 per cent of the entire population growth of the whole nation. These same buyers look even further ahead and see, in spite of the tremendous growth we have already had, that there is still plenty of room to expand, in population, in the development of new physical resources and intellectual leadership, and to make an even greater impact on the nation's economy, social and political front."

Steel Problems?



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Use the *right* steel for the job and avoid that sinking feeling that comes from not knowing for sure whether the steel *is* right. In addition to the common carbon steels such as structurals, plates, sheets, etc., Jorgensen maintains complete warehouse stocks of alloy, stainless, tool and specialty steels. The one best steel for your particular application can be delivered to you promptly. *CALL JORGENSEN FIRST!*

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STEEL

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LUcas 0281	Higate 4-2030	Enterprise 10942	CHarter 1761

MAIL BOX *(Continued on page 13)*

Voice of Industry

Editor, Western Industry:

I think your magazine is doing a bang-up job in highlighting Western industry, particularly in view of the obvious fact industry is decentralizing and moving from East to West. It is my considered opinion that in the next few years the obvious and acknowledged growth of industry and business throughout the Western states may well contribute toward assuring your publication an enviable position as the first voice of industry throughout the eleven Western states.

ROLLE RAND,
Executive Director
Colorado Resources Development Council, Denver, Colorado

Boring from Within

Editor, Western Industry:

Termites. They got into the studding of breakfast room and worked their way up into the shelves above my desk. We drilled holes in 2x4's and squirted in a lot of wolman salts, supposed to be a sure gitter for termites. It got 'em. Three of them were poking their heads out of the holes tonight, three days later, apparently looking for some more of that delicious goop. I slew them in a desperate hand-to-hand struggle. Now major surgery is indicated and I am wearing a tin hat on my head at all times.

STERLING GLEASON
Los Angeles correspondent,
Western Industry

Economic Non-Sense

Editor, Western Industry:

In regard to the views of Professor Earl L. Butz on reclamation projects of the West as expressed recently before the American Farm Economics Association at Laramie, Wyoming (quoted in editorial "Protests on The Horizon," October issue of *Western Industry*):

We in the West have always favored legitimate Reclamation projects, the worth of which could be demonstrated by the financial returns from irrigation as supplemented in particular cases by power revenues. We have regretted to see a valuable and useful program maltreated and abused by efforts to stretch far beyond justifiable limits.

As we see it, there is substantial merit in what Professor Butz had to say. The present and immediate future outlook for Western crops, along with those of the rest of the nation is far from optimistic. Now that Europe is becoming more self-sustaining, the spectre of unwieldy surpluses in a great many agricultural crops once more haunts our economy. The cost of surplus programs runs into tremendous sums and the spending of other tremendous sums for projects which can only aggravate the problem does not make economic sense from any point of view. Present farmers in the West cannot look with favor on the competition which the government subsidizes against them.

Those interested in development for development's sake have been complaining for some time that economic irrigation developments were now difficult to find. That is the real reason why the purposes of reaction, wildlife development, general salinity control, sediment control, improvement of public transportation, protection of public health and promotion of the national defense have been contrived as non-reimbursable objectives to take up the slack between actual economic feasibility and the pseudo variety.

RAY B. WISER, *President*
California Farm Bureau Federation

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Jottings from the EDITOR'S FIELD BOOK

In case you haven't noticed the red smooch on the Table of Contents page announcing our new address as 609 Mission Street, or haven't had occasion to receive a "Change Your Records" card from us, you won't know we have moved. We are no longer on the main drag, but King Publications, of which *Western Industry* is presently the younger brother in a two-magazine organization, are now housed in far more commodious, convenient and presentable quarters than ever before.

Not that all this should mean anything to you as a reader, anyway, but to us that jump from First and Market in San Francisco to Second and Mission seems to mark a milestone which we feel is the increased editorial progress that has been going on for some months.

We have had to grow out of an inferiority complex because we began life as a pocket-sized magazine with a tiny handful of extremely unlucrative advertisements, a satellite of that very solid and substantial magazine known as *Western Construction News*, which dominates the heavy construction industry in the West. In fact, less than ten years ago the assistant editor of *Western Construction News* edited *Western Industry* in his spare time. We were just about as important to the world in general as the smallest of Jupiter's moons.

In January, 1942, we put on a bold front and became a standard size magazine, i.e., standard in size of pages, though hardly standard in editorial content and very substandard in advertising volume. But in that year considerable editorial progress was achieved, we began to pick up a stray advertisement or two now and then, and by January, 1943, we were beginning to attract some attention.

Yet we still had humiliations ahead of us. For example, in March of that year the present editor traveled to Las Vegas to see Nevada's war-wonder, the Basic Magnesium plant. While there we met a construction superintendent, a subscriber to *Western Construction News*, who invited us over to the nearby Manganese Ore plant to see his current job. There he took great delight in introducing us to everyone as "the editor of that little magazine owned by *Western Construction News*." While we haven't yet caught up to "WCN" (all magazine people refer to publications by their initials), nevertheless "WI" is on a pretty solid foundation now, both editorially and advertisingly, and some day, perhaps not too far off, we'll be able to cram the above insulting remark down the throat of the gentleman who had so much fun saying it.

Before the war was over, we had moved up the ladder far enough to have the Secretary of the Navy (the late James Forrestal), writing us his thanks for calling his attention to the war manpower problems on the West Coast. Also the head of the Army Service Forces (General Somervell), writing us a not-for-publication letter on the same subject, and a long telegram about the same mat-

(Continued on page 19)

BWH
DEPENDABLE RUGGEDNESS
BOSTON WOVEN HOSE & RUBBER CO.
CONCORD
BWH
1. NEW oil, grease and sun-resistant cover. Long wearing, tough, abrasion resistant.
2. Asbestos braid insures maximum cover adhesion, includes new type static-conducting wire.
3. High-tensile steel wire for strength and safety.
4. Heat & oil-resistant tube.

NEW BWH COVER DEFIES "RUBBER EATERS"

RESISTS OIL, GREASE, SUN AND ABRASION DAMAGE

Oil, grease, strong sunlight and abrasion are factors that can't be controlled in many industrial operations. Yet they are all "rubber eaters" that tend to break down covers on steam hose and to shorten its service.

BWH technologists sweated over the problem for many laboratory hours before they developed this new, die-hard, synthetic rubber cover for Concord #10 Steam Hose. This improved cover adds so much to steam hose life, nobody with an eye to operating expenses can afford to overlook it. Yet it costs no more than ordinary hose!

Here's what makes Concord #10 a good choice for hard jobs:

1. It has the same dependably strong heat- and oil-resistant tube that won fame for extra service in BWH Bull Dog Steam Hose.

2. It is fortified with braids of high-tensile steel wire which are heat and pressure resistant. Gives strength with extreme flexibility.

3. Asbestos braid assures perfect cover adhesion, includes new type static-conducting wire.

4. NEW cover is unharmed over longer periods by oil, grease and sunlight—resists abrasion and highest steam temperatures.

When you need EXTRA safe hose that prevents "burst" explosions, withstands working pressure to 200 lbs. and gives you more for your money, investigate Concord #10 with new abuse-resistant cover!

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Bring us your toughest problems... we're specialists in solving them. Consult your nearby BWH distributor or write us.

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Distributors in all Principal Cities

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EDITOR'S FIELD BOOK

(Continued from page 17)

ter from Donald Nelson, head of the War Production Board. To be sure, Douglas MacArthur probably hadn't heard of us, but we can worry along somehow without that.

No one else in the publication field had seemed to feel any need for going to bat for the West as a whole, and *Western Industry* acquired that function by what appeared to be general consent. At least the frequent letters we receive, expressing appreciation of our efforts to unify the West and to search out its needs and possibilities, seem to justify our right to carry the torch. Among such problems we have dealt with are freight rates, the need for the West to get its Senators and Congressmen strategically placed on the Congressional committees where they are in a position to do the West some good, the opportunities for manufacturing development afforded in making automobile parts out here, and the need for the West to sharpen up its manufacturing production methods.

And ahead of us—well, all we started out to say was that we had moved, so having said that, we had better stop for now. Dear reader, come on in and see us, whether you have something on your chest, or just want to get better acquainted.

P. S. Sometimes it pays to move. Our lone copy of the famous Smythe report on Atomic energy, which the government now would greatly like to withdraw from circulation but was tossed out rather freely right after VJ Day, came to light. Our apologies to NKVD; we were convinced they had ransacked our office one dark night.

CALENDAR OF MEETINGS

Oct. 1-Nov. 2—Rocky Mountain Conference on Industrial Health, Chamber of Commerce Bldg., Denver

Nov. 1-9—Pacific Chemical Exposition, Civic Auditorium, San Francisco.

Nov. 3-5—Pacific Northwest Personnel Management Assn., Vancouver, B.C.

Nov. 6-9—United Western Miners Conference, Reno, Nevada.

Nov. 7-9—California Fertilizer Assn., Palace Hotel, San Francisco.

Nov. 10-11 — National Symposium of Air Pollution, Huntington Hotel, Pasadena.

Nov. 14-16—Pacific Logging Congress, Seattle.

Nov. 16—Association of Pacific Fisheries, with N.W. branch of National Canners Association meeting at the same time, Coronado, Calif. Golf, on the 14th and 15th precede these meets.

Nov. 17-19—Rocky Mountain Oil and Gas Assn., Cosmopolitan Hotel, Denver.

Jan. 18 - 20 — American Management Assn., general management conference, St. Francis Hotel, San Francisco.

Jan. 19-21—Colorado Society of Engineers, Shirley-Savoy Hotel, Denver

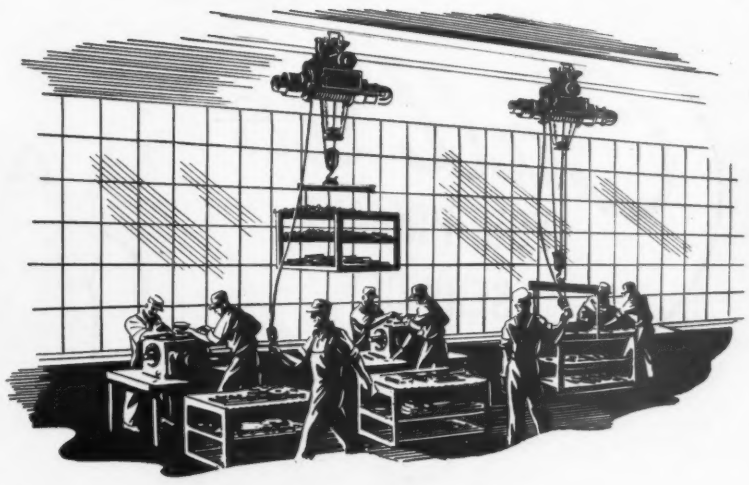
Jan. 20-21—Idaho Society of Engineers, Boise

March 2-4—Society of Plastics Industry, Pacific Coast Section, Hotel del Coronado, San Diego

March 9-10—Canners League of California annual fruit and vegetable sample cutting Fairmont Hotel, San Francisco

March 20-21 (corrected date)—Canners League of California, Santa Barbara

BREAK ASSEMBLY LINE BOTTLENECKS BEFORE THEY FORM



Be sure there is enough lift power and speed to feed parts or sub-assemblies to the main line at the correct tempo.

Will your need be for overhead cranes? What capacity? Or hoists? How large? How operated? From cabs—or from the floor with pendant controls?

The man best qualified to help you answer these queries is the Shepard Niles specialist. He has reference data to cover the performance of all three—and his mind is unprejudiced because he has sold all three for years. Let him help you plan!

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CRANE AND HOIST CORPORATION

Makes and sells all three lifting tools for airborne shop loads.

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STRYCO MFG. CO., 470 Natoma St., San Francisco 3, Calif. • MR. PRESTON FALLER, 1921 Minor Ave., Seattle 1, Wash.

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THE WESTERN OUTLOOK . . . News · Statistics 1

Employment holds stable in California, but unemployment claims in Oregon and Washington rise; Late upturn in lumber; Carloadings less favorable; Oil overproduction serious; Cling peach pack surprisingly large

AGAINST steady employment levels in California and an even tenor of production in most lines recorded in August, the last month for which the majority of our statistics are available, must be matched a greater drop in carloadings for July and August than in previous months, and a rise in unemployment in Oregon and Washington.

California's employment level in manufacturing industries in August was only two per cent below a year ago, but in the two northern states the usual late summer declines in unemployment compensation failed to develop.

Oregon's August unemployment claims in August reached a new high, $1,603,253, which was $401,818 higher than July, and the first week in September was practically on the level of last April. Even with more than 90 per cent of the veterans eliminated because of war-end limitations federal adjustment allowances in August were 41.7 per cent higher than a year ago, while state checks were three times those of August, 1948.

In Washington the average number of beneficiaries under the state program was 84 per cent more than last year. Logging and lumbering were chiefly responsible, but construction, food manufacturing, and shipbuilding were better off than last year.

Despite these discouraging statistical reports from the lumber front, market renews in September indicated a good turn upwards.

The other important unfavorable factor was carloadings, which had been easing off slightly and were comparatively lower in July and August. In May the decline from last year in the eleven Western states was only 3 per cent, in June it was 4 per cent, but in July it had risen to 9 per cent and in August to 10 per cent. Cars received showed a lesser decline. The reduction from last year is as follows:

	Originated	*Terminated*
April	18,297	12,227
May	24,682	2,796
June	27,079	23,021
July	56,722	27,146
August	84,830	35,048

Truck traffic through the California border checking stations was still rising in August, but the Arizona reports are below last spring.

Air freight figures from Pacific Coast airports appear in this issue of *Western Industry* for the first time, but as they only show one month, the trend cannot be indicated yet. Compilations from Los Angeles Airport show the first six months of this year up 28.65 per cent over the same period in 1948.

Carloading estimates for the fourth quarter of 1949 in Pacific Coast Transpor-

(Continued on Page 23)

Business Activity Indices in Per Cent of 1935-1939 Average

(Taken as basis of 100)

	June	July	August
[1]Arizona	318.6	325.7	316.4p
[2]California	219.4	221.5p	219.2p
[3]So. Calif.	264.7	267.8	268.0p
[4]Pacific N.W.	220.5p		
[4]Puget Sound	209.0p		
[4]Inland Empire	218.5p		
[4]Lower Columbia	235.1		

1) Valley National Bank (Phoenix) index, based on a weighted composite of retail sales, agricultural income, and employment in mining, manufacturing and construction, and seasonally adjusted. 1940 = 100.

2) Wells Fargo Bank & Union Trust Co., index based on the following components: Industrial production, freight carloadings, bank debits, department store sales (weighted 4, 3, 2, 1, respectively, and adjusted seasonally).

3) Security-First National Bank of Los Angeles index, based on the following components and weights, and adjusted seasonally: department store sales, 15; building permits, 5; Los Angeles bank debits, 20; residential city bank debits, 5; agricultural city bank debits, 5; industrial employment, 20; industrial power sales, 13; railroad freight volume, 6; telephones in use, 7; real estate activity, 4.

4) Index compiled by Bureau of Business Research, University of Washington. Basis of compilation not indicated.

p) Preliminary estimate.

BANK LOANS

Industrial, commercial and agricultural
(In millions of dollars)

From weekly reporting member banks of Fed. Res. System in 7 western cities: L.A., S.F., Portland, Seattle, Tacoma, Spokane, and Salt Lake.

(Average of Wednesday reports)

1949	
March	2,148
April	2,099
May	2,033
June	2,003
July	2,416
August	1,920

BANK DEPOSITS

(In millions of dollars—adjusted)

Daily average month, all member banks in 12th Federal Res. Dist. Demand deposits excluding U. S. Gov't deposits, cash items in process of collection, and interbank deposits.

1948	Net Demand Deposits	Time Deposits
March	8 760	6,124
April	8.421	6,110
May	8,366	6,109
June	8,322	6,136
July	8,321	6,154
August	8,453	6,178

FREIGHT

Cars of revenue freight, railroad carriers in 11 Western states.

(Compiled from Assn. of Am. R.R. weekly reports)

	Carloadings		Received from Eastern Connections	
	1948	1949	1948	1949
March	455,468	451,267	269,437	264,223
April	508,140	489,843	271,524	259,297
May	656,333	631,651	350,986	348,190
June	593,121	566,042	303,680	280,659
July	588,842	532,120	287,565	260,419
August	766,432	681,602	376,674	341,628

*5-week period.

TRUCK TRAFFIC

(Number of commercial trucks entering state through border checking stations)

	—CALIFORNIA—		— ARIZONA —	
	1948	1949	1948	1949
March	13,380	14,377	19,511	22,336
April	13,776	14,755	18,133	22,129
May	14,741	15,681	19,059	21,182
June	14,816	15,365	19,312	21,504
July	14,763	14,774	19,557	21,465
August	15,203	16,207	19,078	21,004

MANUFACTURING EMPLOYMENT

Estimated Number of Employees—Source: U. S. Bureau of Labor Statistics and State Agencies

	WASHINGTON		OREGON		CALIFORNIA		TOTAL PACIFIC	
	1948	1949	1948	1949	1948	1949	1948	1949
June	164,200	174,250	144,600	130,900*	714,100	698,600	1,022,900	1,003,750
July	179,900	175,650*	153,200	136,600	742,100	711,400	1,075,200	1,023,650
August	183,100	171,500*	156,000	138,200	772,800	757,900	1,111,900	1,067,600

*Preliminary.

	MONTANA		IDAHO		WYOMING		COLORADO		NEW MEXICO		ARIZONA		UTAH		NEVADA		TOTAL MTN.	
	1948	1949	1948	1949	1948	1949	1948	1949	1948	1949	1948	1949	1948	1949	1948	1949	1948	1949
June	17,700	17,900	22,500	20,000	6,800	6,300	56,300	51,000	9,550	10,150	16,500	14,100	26,700	27,200	3,500	3,200	159,550	149,850
July	18,200	18,800	24,900	21,000	6,900	....	56,500	.....	9,800	10,250	15,700	14,400	.....	.....	3,400	3,100	.....	.....
August	18,000	18,900	25,400	21,700	6,900	6,400	.....	.....	9,850	10,300	15,100	14,200	.....	.....	....	....	.....	.....

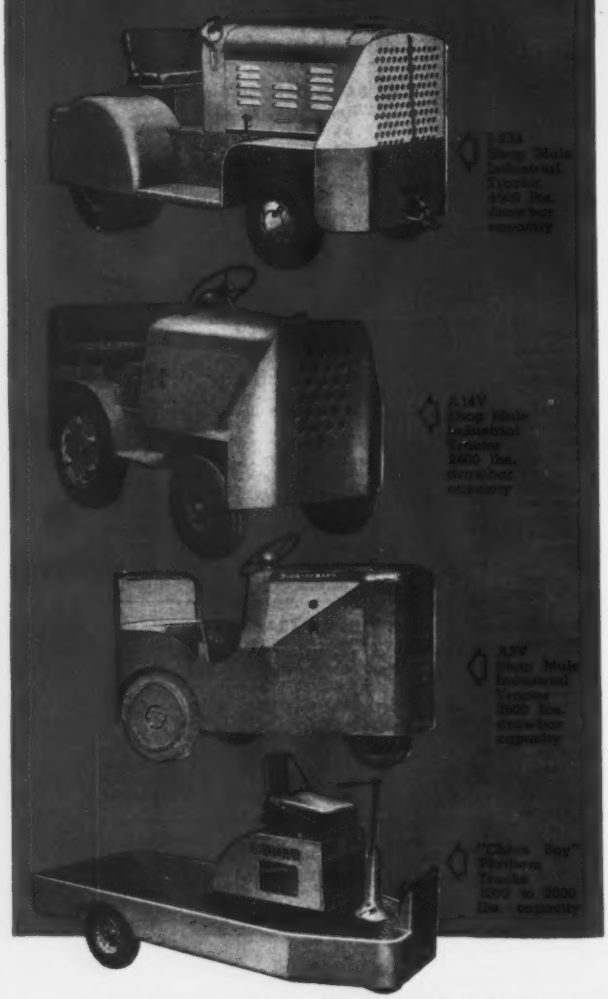
*Revised.

INSURED UNEMPLOYMENT

(Under all programs: figures in thousands. From Social Security Board)

Week ending	Ariz.	Colo.	Idaho	Mont.	Nev.	N. Mex.	Utah	Wyo.	Total Mtn.	Calif.	Ore.	Wash.	Total Pacific
July 2	8.2	6.4	1.7	3.0	1.5	3.7	3.8	.9	29.2	276.6	15.7	27.6	319.9
July 30	8.5	6.7	3.0	2.5	2.2	4.0	6.0	.8	33.7	262.5	22.0	36.8	321.3
Aug. 27	7.3	5.4	1.4	2.3	1.7	3.0	4.7	.6	26.4	223.0	18.8	32.2	274.0

Consult these EXPERTS on your materials handling problems



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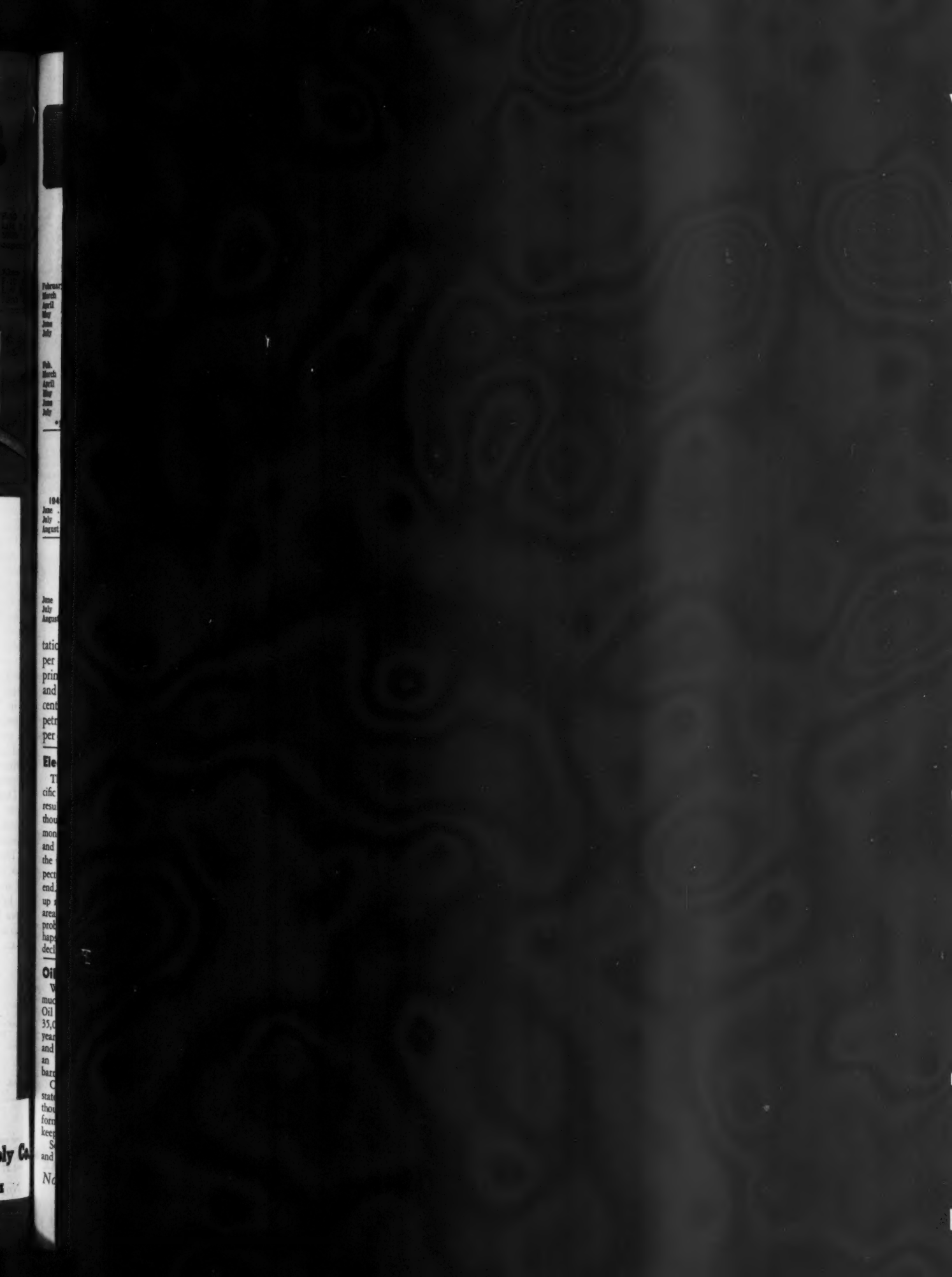

WHOLESALERS' SALES

In thousands of dollars. Percentage changes are from corresponding month of preceding year. From Bureau of the Census.

MOUNTAIN

	Automotive Supplies	Change	Electrical Goods	Change	Furn. and house furn.	Change	Groc. and foods exc. farm prod.	Change	General Hardware	Change
February	776	— 3	2,791	— 4	...	....	....	....	....	....
March	881	— 5	3,582	+ 1	. .	....	....	....	....	....
April	762	—11	3,239	— 15	...	....	....	....	1,914	—13
May	849	— 8	3,546	+ 1	236	— 4	....	....	....	....
June	854	—18	3,233	— 19	282	— 4	....	...	1,694	—16
July	812	—15	3,231	— 13	196	—14	....	....	1,958	—24

PACIFIC

											Industrial Supplies	Change	Lumber & bldg. mat.	Change	Mch. equip. and supplies excl. elec.	Change
Feb.	1,383	—20	11,385	— 11	271	— 33	3,988	....	5,172	—21	1,876	— 2	923	—37	...	....
March	2,315	—11	13,632	— 19	...	.....	9,163	. ..	6,284	—16	2,009	—10	1,085	—18	634	—30
April	2,320	—10	10,629	— 20	214	— 24	3,911	....	6,974	—21	....	....	1,723	— 5	830	—24
May	2,293	—11	11,705	— 5	267	— 22	7,810	....	6,284	—18	1,849	—12	1,717	—14	782	— 8
June	1,695	—13	13,106	+ 1	211	— 31	5,280	....	5,866	—23	1,639	—22	1,643	—16	544	—33
July	2,440	—13	10,328	— 21	196	— 14	10,793	....	4,842	—25	1,858	—13	1,585	—28	587	—35

*Full-line wholesalers.

CONSUMERS' PRICE INDEX

From Bureau of Labor Statistics 100 = 5 yr. Avg. 1935-39

	Los Angeles	San Francisco	Portland	Seattle	Denver
Mar. 15	171.0	174.6	....	....	....
Apr. 15	171.2	....	177.6	....	169.9
May 15	169.6	....	....	172.5	....
June 15	168.7	173.7	....	....	....
July 15	167.2	....	175.3	....	167.8
Aug. 15	166.8	....	....	170.8	....

INDEX NUMBERS OF WHOLESALE PRICES BY GROUPS OF COMMODITIES AND BY MONTHS

Bureau of Labor Statistics, Washington 25, D.C. (1926 = 100)

1949	Farm Products	Foods	Hides and Leather Products	Textile Products	Fuel and Lighting	Metals and Metal Products	Building Materials	Chemicals and Allied Products	House Furnishing Goods	Miscellaneous	ALL COMMODITIES
June	168.5	162.4	178.8	139.2	129.9	166.7	191.4	116.8	145.3	111.3	154.4
July	165.8	161.3	177.6	138.2	129.9	167.4	189.1	118.1	143.2	110.2	153.4
August	162.3	160.6	179.0	137.9	129.7	168.7	188.2	119.7	143.0	109.8	153.0

INDEX OF DEPARTMENT STORE SALES

Index numbers, 1935-39 daily average=100 with seasonal adjustment. Compiled by Federal Reserve Bank.

	Total 12th Fed. Res. Dist.		Southern California		Northern California		Portland		Western Washington		Eastern Washington and northern Idaho		Utah and southern Idaho		Phoenix	
	1948	1949	1948	1949	1948	1949	1948	1949	1948	1949	1948	1949	1948	1949	1948	1949
June	362	335	410	368	316	308	345	325	357	344	375	355	347	309	454	466
July	358	323	404	355	310	290	356	306	354	349	382	350	327	295	478	420
August	361	335	416	373	312	296	367	322	321	349	374	360	342	308	469	407

(Continued from Page 21)

tation Advisory Board territory are 1.7 per cent down from last year. Among the principal declines forecast are machinery and boilers, 20.7 per cent; ore and concentrates 15.5; other metals, 24.2 per cent; petroleum and petroleum products, 13.4 per cent; coal and coke 31.4 per cent; chemicals, 14.8 per cent. Iron and steel are up, however, 2.8 per cent; cotton 37.76 per cent; cottonseed, soybean-vegetable products 33 per cent.

Pacific Northwest Advisory Board reports 694,469 cars loaded in the first eight months, the lowest since 1940, when 680,766 carloads originated. Last year the loadings were 769,351 up to the end of August.

Another cloud on the horizon is the overproduction of oil. Otherwise, the general picture appears stable, with the index of wholesale prices declining less than wholesalers sales and other consumption figures.

Electric Energy

The water storage control period in the Pacific Northwest ended early in September as a result of the loads falling below estimates, although they picked up near the end of the month. As the natural stream flow was down and it became necessary to draw on storage, the utilities used more steam than had been expected in building up supply over the weekend. By the end of the month all reservoirs were up near the rule curve except Flathead. So the area is due to get by until winter, when there probably will be control again, although perhaps not as severe as last year because of declining loads.

Newest steam unit to come into use in California is the 35,000 k.w. station of the city of Pasadena, which followed the Harbor Station of the city of Los Angeles.

Arizona is past its peak demand for the season, and loads have been dropping, so there has been very little curtailment this year. Arizona will be in good supply position until next summer.

Plans for future expansion continue to increase, and the projection of the Federal Power Commission through 1952 has been upped 425,000 kilowatts since its estimate as of Jan. 1, 1949.

ELECTRIC ENERGY

(Production for Public Use—In thousands of kilowatt hours. Source: Federal Power Commission)

	Mountain		Pacific Northwest		California		Total Pacific	
	1948	1949	1948	1949	1948	1949	1948	1949
February	1,363,093	1,423,744	1,648,682	1,721,271	1,590,049	1,610,229	3,238,731	3,331,500
March	1,200,824	1,312,949	1,628,060	1,774,425	1,572,699	1,688,540	3,200,759	3,462,965
April	1,232,358	1,267,957	1,618,678	1,655,765	1,424,480	1,736,578	3,043,158	3,392,343
May	1,248,630	1,218,907	1,555,721	1,658,316	1,559,727	1,857,778	3,115,448	3,516,094
June	1,453,761	1,470,751	1,455,985	1,704,943	1,746,341	2,082,002	3,202,326	3,786,945
July	1,564,700	1,445,233	1,662,191	1,681,142	1,946,774	2,176,358	3,608,965	3,857,500

*Revised.

Oil

West Coast petroleum men are becoming much concerned about overproduction. Standard Oil of California says coast inventories grew 35,000 barrels a day in the first quarter of this year, 135,000 daily during the second quarter, and 144,000 barrels a day in the third. Result is an unsold accumulation here of 24,000,000 barrels since January.

California, unlike Texas and other major oil states, has no petroleum conservation law. Although some fields have cut back, other California areas have increased output enough to keep supply well above demand.

Some strengthening of demand for crudes and distillates has been noted recently, but the market for these on the Pacific Coast has remained particularly depressed.

U. S. domestic crude production has been cut about 12 per cent this year. These cuts have been more than offset by increased imports, which have risen about 25 per cent.

(Continued on Page 25)

PETROLEUM

(California, Oregon, Washington, Arizona, Nevada)
(From Bureau of Mines)

	CRUDE PRODUCTION (Barrels, daily avg.)	TOTAL DELIVERIES (Thousands of barrels daily) GASOLINE		GAS OIL & DIESEL		HEAVY FUEL OIL		ALL PRODUCTS	
	1949	1948	1949	1948	1949	1948	1949	1948	1949
February	947,000	360	365	...	171	398	391	1,025	1,059
March	949,000	336	368	141	152	369	386	1,036	1,056
April	942,000	353	364	129	120	372	370	1,016	1,017
May	927,000	362	372	141	126	386	384	1,021	1,001
June	921,000	350	380	125	132	379	339	1,023	994
July	907,000	350	374	130	131	368	311	1,020	979

54 EVERDUR WELDS for extra strength and rigidity . . .

TOTAL WELDING TIME: FIVE MINUTES

Electrically spot-welded Harrison Steel Kitch Cabinets being carbon arc welded with Everdur rod. Circles on finished cabinets, below, indicate 5 points where members are reinforced.

THIS is the way Vincent Russo, Superintendent of the Harrison Steel Cabinet Company of Chicago, tells the story:

"Although our steel cabinets are electrically spot-welded throughout, we have found that carbon arc welding the corners and joints with Everdur* rods assures the additional strength and rigidity a quality item deserves.

"Years ago we found that by bronze-welding our drawer guides in the cabinets, rather than screwing them in place, not only was added rigidity obtained, but we eliminated the possibility of drawers getting out of line because of loosened screws.

"In our average-size sink and wall cabinets there are a total of 54 carbon arc welds made with Everdur rod. While this seems excessive, our actual welding time is less than five minutes, due principally to the low melting point of this copper-silicon alloy rod. The additional cost of this welding is far overshadowed by the extra strength and added quality."

Anaconda Welding Rods are available in a wide range of alloys suitable for many oxyacetylene or arc welding purposes. They are fully described in Anaconda Publication B-13. For your copy write to The American Brass Company, Waterbury 88, Connecticut. In Canada: Anaconda American Brass Ltd., New Toronto, Ont. 49155

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You can depend on

ANACONDA

BRONZE WELDING RODS

(Continued from Page 23)

Marshall Plan efforts to help depressed nations become self-supporting are curtailing U.S. markets for oil abroad. Independent producers now are pressuring Congress for quotas on oil imports. Devaluation of the pound will increase the inducement to foreign nations to buy "sterling" oil instead of "dollar" oil.

Test runs at the Government's shale oil extraction plant at Rifle, Colo., are reported to show that the shale can be treated at a cost of 32.9 cents per ton. The Bureau of Mines considers this figure low enough to permit large-scale development, should conditions require. In another report on estimated costs of coal hydrogenation, the Bureau figures that unlimited quantities of premium motor gasoline now could be produced from coal and retailed to the motorists at a price only three or four cents higher than current quotations.

Coal

With virtually all mines in Utah and Wyoming closed during the latter part of September, bituminous coal production for the month was expected to be off about 25 per cent.

BITUMINOUS COAL AND LIGNITE

(In thousands of tons—From Bureau of Mines)

	Colo.-N. Mex.		Wyoming		Utah	
	1948	1949	1948	1949	1948	1949
May	564	346	523	426	711	485
June	509	288	480	327	568	356
July	351	195	348	336	508	265

	Montana		Wash.-Alaska	
	1948	1949	1948	1949
May	208	200	134	87
June	191	204	126	100
July	220	166	95	74

Gas

Although natural gas sales in the Pacific Coast states as reported by the American Gas Association showed a slight increase in volume for the second quarter of 1949 over 1948, total revenues were down 1.2 per cent, and in manufactured gas they were off 11.9 per cent. Natural gas is used mostly in California, and the manufactured product in Oregon and Washington.

The gain in residential customers for natural gas was 30,107, or 6.6 per cent, indicative roughly of population gain, but manufactured gas customers were 396,473 less, or 17.5 per cent. Industrial sales for natural gas were up 2 per cent, commercial sales off 1.7 per cent. No gains of any kind were reported for manufactured gas. This is the first time that unfavorable reports have shown up in gas statistics since the war.

Natural gas utility sales in the mountain states showed good gains, 13.5 per cent more customers, 14.8 per cent more sales and 17 per cent more revenue.

NATURAL GAS

(CALIFORNIA)

(Compiled by Roy M. Bauer, gas supply supervisor, Southern California Gas Company)

	— Number of Consumers —		*Utilization (in thousands of cubic feet)			
1949	Domestic and Commercial	Industrial	Domestic and Commerc'l Sales	Industrial Sales	Electric Generation	Net Receipts from Producers
January	2,562,162	5,754	39,696,269	5,130 286	2,009,387	54,385,974
February	2,579,818	5,751	39,829,298	6,000,347	2,314,215	44,446,396
March	2,590,038	5,766	31,154,708	9,567,485	2,993,925	44,722,443

Steel

Business has been fairly good up to the time the strike started, possibly due to some advance buying in anticipation of the trouble, and apparently some buyers were well stocked. The strike has not affected Kaiser's operations, as his contract with the union was not due to expire until October 15, and meanwhile he signed a new contract granting medical, surgical, and hospital benefits to be included in a 10 cent an hour that the company will set aside for social insurance and pensions. Kaiser has maintained a hospital-medical center at Fontana for several years, and thus is in good position to supply these benefits. The company has agreed to pay 4 cents an hour for social insurance and 6 cents for pensions as recommended by the President's fact-finding board.

IRON AND STEEL

Western Area of the United States

From American Iron and Steel Institute (in net tons)

	Pigiron Output	Percent of Capacity	Steel Output	Percent of Capacity
March	235,176	95.9	451 926	101 1
April	216,431	90.3	414,794	95.8
May	194,525	78.6	405.170	90.6
June	170.546	71.2	351,917	81.3
July	170.475	69.1	338,861	76.0
August	178,866	72.3	372,812	83.4

ALLOY STEEL

(In thousands of bbls.; from U. S. Bureau of Mines)

	Output	Carbon Ingots, Hot Topped*
March	8.127	13,896
April	5.068	12.999
May	4.423	9.690
June	4.990	7.051
July	4.452	6.828
August	4,177	7,182

*Included in total steel.

Nonferrous Metals

Nonferrous metal production continued below normal during September because of the closing of some mines which cannot operate at a profit under current metal prices. But the shutdowns will not greatly affect production because of the fact that these properties are generally small.

NONFERROUS METALS

JULY

(Production in short tons. From U. S. Bureau of Mines)

	ARIZONA	UTAH	MONTANA	NEW MEXICO	NEVADA	WEST'N STATES
Copper	25,560	17.500	3,840	5,810	1,570	55,143
Lead	2,810	3,490	1,350	323	760	18.694
Zinc	5,900	2,480	4,070	1,523	1,340	25,892

Aluminum

Aluminum continues to pick up, with September shipments the highest for several months. Part of this is a seasonal rise due to demands of utensil manufacturers, but the aircraft industry has increased its purchases, evidently having worked down inventories. Because galvanized iron could not be obtained fast enough, and also because of aluminum's superior heat reflectivity, a brisk trade developed in sheets for grain storage bins. The aluminum bins create less interior heat and fluctuation in temperature.

Permanente reported that its sales for September were approximately 60 per cent above the average for the three previous months. The Permanente foil plant, recently put into operation, has developed some volume for freezer locker foil in the heavier gauges.

Aircraft

Devaluation of the British pound has put a new hurdle in the path of U. S. manufacturers' plans for expanding sales of commercial planes abroad. English aircraft makers now will enjoy the same favorable price position as British motor car builders in offering their wares to nations outside the dollar exchange orbit.

Actually, the effect on U. S. industry will be less than has been generally believed, since (1) America produces many advanced military plane models available nowhere else; (2) foreign governments will use their carefully hoarded dollars to buy them, sacrificing less urgent wants; and (3) export business has accounted for only a very small part of this industry's sales. Douglas, however, has been pushing hard its new Super DC-3 and its new DC-6A Liftmaster cargo ship in an effort to reactivate the worldwide market enjoyed by its earlier models, and Lockheed has been developing a good foreign demand for its Constellation.

Disclosure that Russia has the bomb had a double-barreled effect on Western aircraft men, (1) arousing fears that pressure may be brought to shift more military work to the interior, and (2) stimulating expectation that the 48-group Air Force program may be enlarged to offset this new threat. Such a move probably would mean more emphasis on interceptor planes, a phase recently eclipsed by the B-36 controversy.

More push also may be put behind the Air Force's nuclear energy propulsion project, for which Fairchild is prime contractor in association with ten other companies, Navy, AEC, and NACA. Atom-propelled planes might have the immense power necessary to fly a ten-ton craft 1500 miles an hour at 70,000-foot altitude. Such a ship could bomb any point in the world and return to its base . . . a range about 50 per cent greater than that of the B-36.

(Continued on Page 27)

AIR FREIGHT

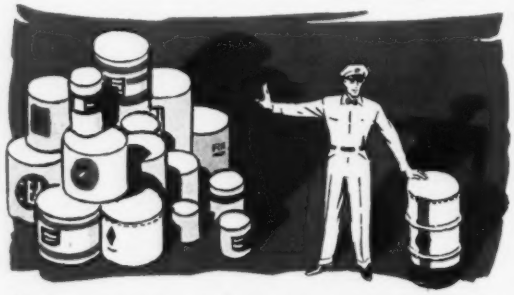
(In pounds. Figures from airports.)

	Los Angeles*		San Francisco		Oakland		Portland		Seattle	
	In	Out	In	Out	In	Out	In	Out	In	Out
August	1,292,300	1,260,319	1,608,977	937,110	111,884	241,723	....	...	437,172	889,494

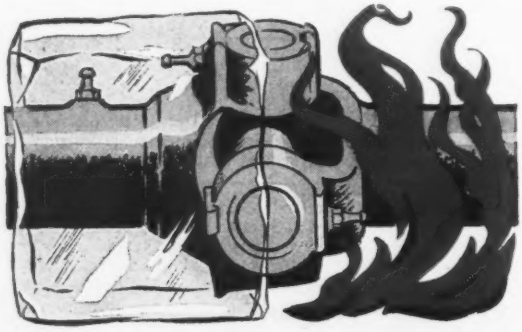
SAVE TIME— CUT COSTS with MULTI-PURPOSE UNOBA GREASE!

1. Prior to Union Oil Company's development of multi-purpose UNOBA, practically the only greases available were made with sodium, calcium and aluminum bases. Calcium base grease is water-resistant but has a low melting point. Sodium base resists heat but doesn't stay put in the presence of moisture. Aluminum base withstands water but jells at high temperatures.

2. There was an obvious need for an all-around grease that would resist *both* heat and water. Union Oil Company's development of UNOBA—a *barium* base grease—filled this need for the first time in history. As a result, multi-purpose UNOBA is in demand for a great number of uses in all branches of industry.



3. For example, trucks and automobiles formerly required a half-dozen or more lubricants for a single lube job. Now these specialized greases are replaced by UNOBA—one grease for the entire job. Industrial plants find that UNOBA simplifies lubrication by performing jobs formerly requiring many different types, grades and brands of greases.



4. UNOBA gives thorough protection at temperatures from below freezing to 300° F. It sticks to metal surfaces with a tenacity that boiling water can't break. Because of these qualities, industry has found multi-purpose UNOBA to be the ideal lubricant. For UNOBA saves time and cuts costs by simplifying lubrication and gives the greatest possible protection in the presence of extreme heat or heavy moisture.

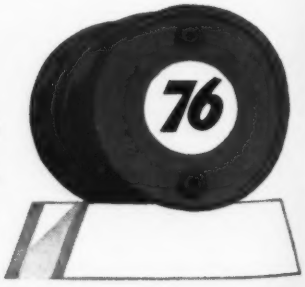
For full information phone your local Union Oil Representative or write Sales Department, Union Oil Company, 617 W. Seventh St., Los Angeles 14, Calif.

ANOTHER

UNION OIL

SUCCESS-TESTED

PRODUCT



(Continued from Page 25)

More orders have been placed for radio-controlled small jet planes for use as targets by Navy and Air Force gunners. Martin has come forward with its KMD-1, an all-metal monoplane ten feet long and with 22-foot wingspan, powered by a ram-jet engine. Ryan has received an additional $1,000,000 order for its XQ-2 target planes. Both planes fly at nearly the speed of sound, affording realistic combat conditions for gunners.

North American Aviation is building a new research laboratory at its Downey plant to study specialized problems encountered in guided missile flight, including extreme altitude, "G" loads and vibration, extremes of heat, cold and humidity, and gyro mechanism characteristics.

Lumber

The lumber market entered the fall season in the best condition it has enjoyed in more than a year. By mid-September, Douglas fir region orders were up to 130 million board feet in a week against 110 million for production and 116 million for shipments. Pine orders of 56 million for reporting mills were 10 million ahead of both production and shipments.

Prices in fir have been holding firm with another $1 added here and there until foreign currency devaluation brought sudden uneasiness, followed by realization that there would be little or no immediate effect on the market. The current upswing has been without the aid of the sick export market and devaluation changed the status but little. Some mills, however, are worried that Canada may take advantage of its 10 per cent devaluation if and when the market grows weaker. This, aided by lower Canadian labor and cargo shipping costs, would have a bearish but not disastrous effect, it is felt. Log supplies are good. The freight car shortage has slowed shipments from the Willamette valley section of Oregon, but other Western states lumber producing areas have had little trouble.

LUMBER

(In thousands of board feet)

From West Coast Lumbermen's Association (Douglas Fir, Sitka Spruce, Port Orford Cedar, West Coast Hemlock, Western Red Cedar):

Year through August	1947	1948	1949
Production	5,585,551	5,969,281	5,418,880

From Western Pine Association figures (Idaho White Pine, Ponderosa, Sugar Pine and associated species):

Year through August	1948	1949
Production	1,986,233	1,846,932

From California Redwood Ass'n figures (includes redwoods and whitewoods):

Year through August	
Production	316,604

Pulp

British devaluation of the pound, which was followed promptly with similar action by Canada and Scandinavian countries, dealt a heavy blow to West Coast pulp producers. A British Columbia manufacturer of dissolving pulp (rayon) reportedly cut price $13 to $15 a ton—about 10 per cent. Swedes, who are big pulp producers and exporters, cut unbleached sulphite, delivered New York, heavily. Swedes have big pulp inventories which they must move before freeze-up. They need U. S. dollars desperately and pulp, tariff-free, is main item they can convert to dollars.

These devaluation price slashes are having reverberations all through the industry. Operators on West Coast are apprehensive and future picture is not at all clear. One result may be firming up of wage situation. Contract negotiations, carried over from June, were resumed in September, with outcome not yet known.

PULPWOOD

(Pacific Northwest)

(Cords of 128 cu. ft., roughwood basis. Source: Bureau of Census)

	Receipts	Consumption
May	316,352	255,563
June	368,695	251,302
July	273,469	189,542

Plywood

Outlook for Pacific Northwest's important plywood industry has improved much in the past 30 days. Prices have firmed and some mills have even upped prices 2 to 3 per cent, with more expected to follow. Sheathing grades, however, are sluggish. Most mills said to be booked with orders to run at high rate to end of November. Dealer and jobber inventories are low; price upturn has stimulated buying for stocks.

With high tariff on Canadian plywood, money devaluation has had little effect, except to cause some confusion in export market which is not very large. Foreign buyers holding up orders for letters of credit. Log market, for both lumber and plywood grades, has firmed up again as this year's big slowdown in the woods has begun to show up very low log inventories. Logging weather is fine now, but a freeze-up like last year will cut winter log supply rather short.

Cement

Business is reported good all along the Coast. McNary Dam in the Pacific Northwest has been keeping mills in that area busy, and highway contracts and residential and industrial construction have contributed their share to the demand.

CEMENT

(In thousands of bbls.; from U. S. Bureau of Mines)

	California		Oregon - Wash.		Colo.-Wyom. Mont. Utah - Idaho	
	1948	1949	1948	1949	1948	1949
Feb.	1,824	1,593	414	208	315	279
March	2,013	1,828	515	590	301	482
April	2,140	2,006	570	649	404	506
May	2,019	2,042	559	652	415	488
June	2,022	2,066	586	636	394	529
July	2,077	2,011	638	657	487	653

STRUCTURAL CLAY PRODUCTS

	UNGLAZED BRICK (in thousands of standard brick)		UNGLAZED STRUCTURAL TILE (short tons)		VITRIFIED CLAY SEWER PIPE (short tons)	
	Mountain	Pacific	Mountain	Pacific	Mountain	Pacific
January	6,864	12,192	2,200	1,494	2,321	13,630
February	7,877	11,163	1,562	1,468	2,280	12,967
March	10,145	11,576	1,557	2,604	2,717	16,523
April	8,276	16,237	2,519	2,203	2,785	15,765
May	11,997	20,864	2,894	2,691	2,534	15,751
June	13,314	28,182	1,887	2,644	2,657	16,679

ETHYL ALCOHOL

(From Bureau of Internal Revenue)

Production (in proof gallons)

DOMESTIC UNDENATURED ALCOHOL

1949	California	Colorado	Washington
March	378,555	.....	448,298
April	558,733	.....	321,203
May	379,931	.....	269,087
June	668,503	.....	244,170
July	451,006	.....	.....
August	416,574	.....	174,602

DENATURED ALCOHOL

1949	California Completely Denatured	Specially Denatured—California	Specially Denatured—Utah	Specially Denatured—Washington
March	20,905	267,450	....	8,186
April	38,306	333,390	....	16,329
May	15,420	267,394	....	8,168
June	30,608	292,489	....	16,301
July	4,566	171,858	....	8,142
August	21,669	260,509	....	16,286

Chemicals

Sales of commercial fertilizers in California for the second quarter of 1949 amounted to 152,686 tons as against 132,493 tons for the first quarter of the year, according to preliminary figures released by A. B. Lemmon, Chief of the State Bureau of Chemistry. Mixed commercial fertilizers totaled 50,519 tons as compared with 42,725 tons for January, February, and March.

Canning and Packing

California's cling peach pack for this season was around the 16,250,000 case mark (No. 2½ can basis), with a little over 4,500,000 cases of fruit cocktail, 500,000 cases of fruits for salad, about 107,000 cases of mixed fruits and 435,000 spiced and sweet pickled. The yield of canned clings was considerably higher than expected, which has caused some uneasiness, but on the other hand, the pack is practically entirely in top grades as a result of the increased minimum diameter of fruit agreed upon by packers and growers. The agreement failed to curtail the pack, as had been hoped, but it brought good results as far as quality is concerned, which will make for easier selling, and relieve the curse of lower grades continuing to hang over the market.

The California tomato season turned out to be a very early one, and the total yield will probably be around 600,000 tons, but pack estimates are uncertain because of the difficulty in determining how much of the crop went into canned tomatoes and how much into tomato paste and other tomato products.

Asparagus pack for California this year was 2,625,134 cases, according to the final audited report of the Asparagus Advisory Board. It consisted of 1,430,005 cases of white and 1,195,129 cases of all-green. White asparagus is canned exclusively in California. Last year the total pack was 1,983,201 cases.

Northwest apricot pack 48,557 cases, on No. 2½ can basis, shows continued decline in size; 1948 was 84,503 cases and 1947, 141,437 cases. Cherry pack up, however, with 895,167 cases this year, compared to 548,194 last year. Boysenberries 217,970, against 343,793 in 1948. Loganberries riding even, 79,074 cases, last year 77,108. Youngberries microscopic, 7,639 cases, compared with 22,535 in 1948.

(Continued on Page 29)

Developed by Shell scientists . . .

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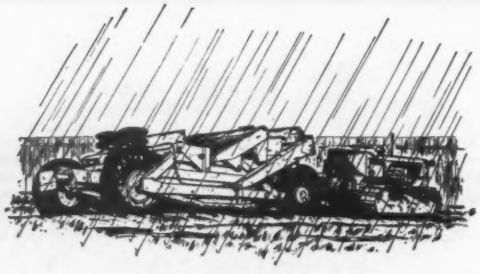
RUST PREVENTIVES

to keep your equipment ready to go when you need it



Ever figure how much rust costs you?

Equipment out of commission . . . expensive overhauls . . . high-paid crews standing by. These are just some of the ways rust can slow the progress of a job . . . *and elevate costs.* Shell engineers figured it up, too . . . saw the need to offset rust damage *when it occurred most* — during lay-up time. Shell Ensis Rust Preventives were the result.

Shell Ensis Rust Preventives stop corrosion

Yes, they actually stop rust by coating all metal surfaces with a tough film that keeps out air and moisture. And it stays on heavy equipment, tools, air drills, exposed gears, bearings and other machinery — *even through months of outdoor storage.* To prevent engine rust, try using a 400-series Shell Ensis Oil. These oils are completely soluble in lubricating oil . . . need only be drained and replaced with regular oil when unit goes back into service.

They're low-cost and easy to apply

Compared to the cost of cleaning rust off your equipment, Shell Ensis Rust Preventives come mighty reasonable. And no trouble at all to use. For external surfaces, you simply apply by dipping, spraying or brushing. For engine interiors, replace regular oil with Shell Ensis Oil 401 or 402 and run engine to coat all moving parts. Result: rust-free equipment . . . ready to go *when you need it.*

SEE YOUR SHELL REPRESENTATIVE FOR THIS IMPORTANT PROTECTION DURING THE LAY-UP SEASON

SHELL

(Continued from Page 27)

California canned cherry pack 688,081 cases, new all-time record. Last year was only 236,259 cases. Final apricot figures 2,553,633 cases; 1948 was 4,878,145 cases. This year lowest since 1940, due largely to heavy carryover of low grades from last year but the total supply on hand September 1 was only 2,589,714 cases, No. 2½ can basis.

At September's end, with nearly all the figures in, Alaska salmon pack shaped up like a fairly normal year with about 4,300,000 cases. This compares with 3,900,000 in 1948, and 4,200,000, 3,875,000 and 4,298,000 for years immediately preceding. Unanticipated late big run of pinks sent figures up, and overall pack will run heavy to that species, light on reds and chums.

Leading producers have cut prices to $16 and $15 per case (48 1-lb. talls) on pinks, which compares with $23-$24 a year ago. Admitted purpose was to stabilize market. British Pound devaluation probably have little effect. U. S. tariff of 25 per cent on canned salmon is still a deterrent to Canadians despite 10 per cent currency depreciation. Canadian packers launching big all-Canada promotion program to boost domestic consumption of salmon. Outlook for next year is lower price and very short run on pinks.

Sugar

This has been a bad season for California & Hawaiian Sugar Refining Company, dominant factors in the West. Not only have they suffered from the Hawaiian dock strike, but their big Crockett cane refinery shut down on September 1 because of a plant strike. Meanwhile the beet sugar processors in the West have started to put in domestic consumer packaging equipment, invading a field formerly exclusively held by C&H. Spreckels Sugar Company led the van, getting its equipment into operation in September at the Salinas refinery, with 1-lb. powdered and brown and 2-lb. cube.

The beet sugar people have taken occasion to point out that a recent increase in beet sugar prices was due to maintaining the normal relationship between cane and beet prices, and not to the formation of the Western Beet Sugar Processors Association.

Beet crop forecasts of Sept. 1 showed an increase of 1 per cent over Aug. 1, which would give 9,865,000 tons of beets as against 9,422,000 harvested last year. This is below the 10,145,000 ton average to run 18 tons to the acre, as compared to 16.4 tons last year. California's decline in tonnage is due to a decrease in the Imperial Valley, where acreage was contracted for last fall when the outlook was less favorable than this spring.

Detailed forecasts are, in short tons:

	1948	1949
California	2,819,000	2,574,000
Colorado	1,370,000	1,708,000
Utah	427,000	392,000
Wyoming	310,000	364,000
Idaho	1,233,000	1,008,000
Montana	672,000	738,000
Nebraska	496,000	518,000

CONFECTIONERY AND COMPETITIVE CHOCOLATE PRODUCTS

(From Bureau of Census)
(In thousands of dollars)

Month	COLO. - IDAHO - UTAH Sales	Per Cent Change from same month of Preceding Year	— WASH. - OREGON — Sales	Per Cent Change of Preceding Year from same month	— CALIFORNIA — Sales	Per Cent Change of Preceding Year from same month
January	577	— 9	397	—18	2,333	+ 6
February	490	+ 3	296	+ 8	2,122	— 2
March	589	+ 1	412	+17	2,504	+ 5
April	499	+ 3	341	+ 8	1,934	—14
May	387	+ 6	227	— 3	1,663	— 5
June	381	+ 2	217	...	1,731	— 1

Flour

After the big selling of flour around the first of September when everyone seemed to feel it was about time to buy, things settled back to wait to see what changes in the picture devaluation might bring. Grinds have not been too good, some of the mills in eastern Oregon and Washington having been operating on a 50 per cent basis, running only two or three days a week. The feed business continues good.

WHEAT FLOUR

(In thousands of sacks. From Bureau of the Census)

	Ore.-Wash.	Montana	Utah	Colorado	California	Total
February	1,388	236	269	366	353	2,612
March	1,269	277	329	426	372	....
April	971	264	259	363	261	2,118
May	1,159	278	281	307	313	2,338
June	1,210	268	305	346	415	2,544
July	1,217	237	329	337	396	2,516

Meat

The U. S. Army puts up a tough fight under all circumstances, but it was not quite strong enough to prevent the meat packing industry from getting a bill started on its way through Congress to head the army off from buying Argentine beef. This is of particular interest to packers in the West, since the Army is the only real buyer of heavy steers, and the majority of overseas troops are in Japan and thus supplied from Western houses. Packing houses are running full time, especially on pork, due to full supplies of hogs. Tallow continues weak, due to the inroads of synthetic detergents on the soap market, but the industry is looking forward to some help in the indefinite future from a $250,000 research program at the U.S.D.A.lab. in Philadelphia on tallow and leather.

Apparel

British monetary devaluation promptly halted marketing of the Western wool clip, but the American Woolen Company immediately announced that prices of its wool fabrics would remain unaffected for the immediate future. Other major suppliers followed suit, stabilizing the market. Indications now are that wool material costs probably will stay put, at least during production of next spring's apparel lines.

Cotton fabric prices have been creeping upward. Many buyers believe placing of the new government support price for cotton at 29½ cents, only a little below the former figure, ends prospect of further declines this year.

Nylon fabrics still are on an allotment basis, preventing Western sportswear makers from fully exploiting recent favorable reaction to new styles.

With apparel prices now running perhaps 25 per cent lower than last year, sales are picking up faster than general retail business. Inventories are low and the trade is more optimistic than for some time.

Silicone News
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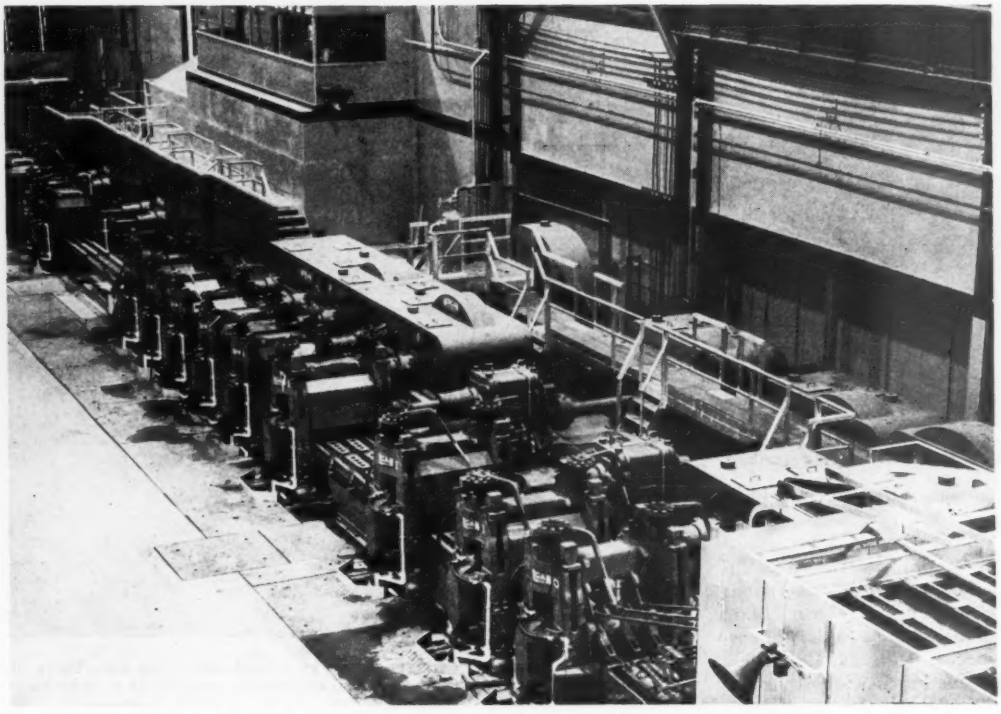


FROM STEEL BILLETS TO STEEL RODS . . . *three abreast, and traveling at an estimated speed of 156 miles per hour, new steel rods are manufactured at breakneck pace as they zip down the line through these machines. This production line of roll "stands" is now in operation, reducing steel billets to rods at the new $5,000,000 rod mill of Colorado Fuel & Iron Co., at Pueblo. Three rods are manufactured simultaneously.*

Decrease Your Labor Cost, Hold High Quality by Simplifying

By CHESTER SCARCE
Factory Superintendent
Lenkurt Electric Co., San Carlos, Calif.

PRODUCTION of electronic end-use equipment is generally conceded to be one of the most complex in the entire field of technology, comprising as it does the basic problems of so many other industries ranging from chemistry to welding.

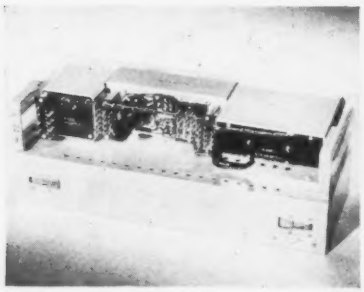
Yet Lenkurt Electric Co. produces carrier telephone, telegraph, telemetering, and control equipment of an extreme complication with a labor force made up generally of semi-skilled assembly workers instead of the educated and experienced technicians employed for parallel operations by most producers of such gear.

The various kinds of carrier equipment mentioned above require a word of explanation for those outside the immediate field. In physical appearance, most of it resembles so-called "relay racks" filled with individual panels of concentrated assemblies of electronic components. These include transformers, resistors, capacitors, electron tubes —in general, the kind of parts found in the ordinary home radio—but in addition, small control motors, variable autotransformers for voltage control, indicating meters, and numerous items *not* usually found in radio receivers.

Carrier equipment, in function, serves primarily in communication activities. It is used by telephone companies, power utilities, railroads, pipeline operators, and others having land lines or radio links for communications between fixed points. Its function is to make possible the transmission of more than one conversation at a time over the same pair of wires or radio circuit.

This is accomplished in a way quite similar to radio broadcasting where voice and music in the audible spectrum are translated (radio engineers say "modulated") up to the so-called radio frequencies (r-f) which can be broadcast from a radio station and picked up by a radio receiver.

In the same way that numerous radio stations can operate close together on the dial without interference, numerous carrier conversations can operate on adjacent channels of a carrier-equipped wire line without trouble. Telemetering and control are derived functions where voice-frequency channels are used to meter quantities—voltage, for instance—at remote points or actuate switches or controls in the same way.



• Single panel of carrier equipment. This typifies the basic unit described.

This equipment, therefore, could be expected to have a marked resemblance to radio. It differs primarily because of the facts that: (1) Breakdown of industrial or commercial communications is more serious and costly than failure of a home radio, and (2) this gear customarily operates 24 hours a day. These are two reasons for the use of heavier-duty components and more conservative design throughout. In addition, carrier equipment is required in most cases to operate to much higher technical standards than radio receivers—more comparable with the practices applied to broadcast-station transmitting equipment.

The Key

The key to manufacturing this kind of product without requiring impossibly large quantities of highly-skilled time on each part, is an intensive application of the basic philosophy of production line techniques as they have developed so highly in our economy, even though the quantities involved here are infinitesimal compared to those ordinarily meant by the term "mass production." Each complex job is broken down into smaller pieces until each operation reaches a level of relative simplicity and can be grasped and remembered by any normal assembly worker.

In addition to this, special emphasis is placed upon the so-called "package" of drawings which cover any particular unit of equipment. Before any assembly work is done, a full set of drawings is completed, showing not only the overall assembly of the unit but also full detail on every operation that might create a problem in understanding. This kind of organization of data is common among large companies, but sometimes smaller manufacturers are tempted into the idea of cutting corners with rudimentary sketches and verbal instructions which are eventually found to cost more in confusion and misunderstanding than adequate drawings do.

• Technicians check out carrier system by actual operating test. These eight racks of equipment represent two remotely controlled terminals of a communication link.

Each piece of Lenkurt equipment goes through two distinct design processes. It is first designed for operation and then, after a shakedown run, is redesigned for production. In this engineering step, special pains are taken to make the unit fit the family pattern so basic assembly operations will be applicable to each new piece of equipment.

Flexibility Essential

This greatly facilitates switchovers from one unit to another on the production line. It makes for a flexibility which is essential in the manufacture of such a large variety of individual units as are produced. Of course, the production-engineering step performs the commonly-practiced function of removing from the preliminary design, assembly pitfalls of all kinds and, insofar as is possible, simplifying the unit and making it easy to build.

No matter how intricate, each complete carrier system has many basic functions in common with many other systems. This means that many of the subordinate panel assemblies in different systems are the same; or, stated another way, that relatively large quantities of each kind of unit can be manufactured at once and held in stock for assembly into systems to be produced in the future.

Complexity Eliminated

This immediately cuts the overall complexity of the manufacturing operation to that of an individual panel at a time and permits the sub-assembly operations to be divided up among the assembly personnel on the line. A single representative panel is illustrated above, left.

Facilities

The Lenkurt plant comprises a large raw stock department (electronic components come in an almost infinite variety); a comprehensive metal-working department capable of forming and welding, both spot and seam, aluminum sheet up to No. 10 gage; a transformer department for winding coils, assembling laminations, vacuum impregnating and potting units in containers; a separate coil-winding department for other kinds of coils such as those based on toroidal cores; a filter-assembly department (electrical wave filters are a leading subassembly in this equipment); a general assembly sec-

• View of production facilities at Lenkurt Electric Co. Transformer winding process is shown, with a couple of finished transformers seen on the bench at the left.

tion; a magnetic-core molding department; and a completed-stock storage area for panel assemblies awaiting combination into complete systems—which is done in still another department.

Technical Supervisors

In all manufacturing sections, technicians are used for supervision and leaders are designated, at higher rates of pay, for each type of operation so their example will lead the others to greater efforts and create the desire for upgrading to the higher rate. Production samples and detailed drawings of the units in work are constantly available on the production line for examination by the workers. Mechanical aspects of the equipment are thus continually being compared with the actual work of the technicians who produce the sample units and supervise draftsmen in the production of detailed drawings.

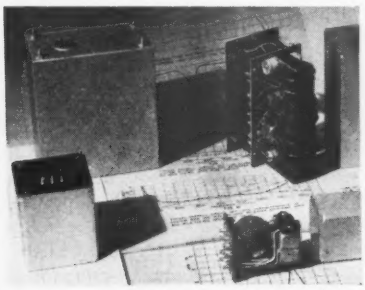
Qualified Skill Available

The electrical-circuit knowledge and skill of these technicians are made available to the assembly workers also through the control exercise in the preparation of complete wiring-cable harnesses before wiring of the units is begun.By the application of a number of basic coding conventions, generally understood throughout the plant, the future connections within a panel assembly can be precisely controlled by the design of the cabling board on which the harness is fabricated. The boards are laid out by members of the technician group.

In most cases, color coding of the individual wires is not resorted to as it leads to complications in decoding and difficulties in the maintenance of adequate stocks of all the colors and gages of wire that would be required. Numbering of leads is even more complicated.

Cable Design

Instead, cables are designed so the termination of a particular circuit is immediately obvious by its position and arrangement. If two wires come out from the main cable at one gap in the tying twine, they either go to a single electrical tie point or to two terminals of optional polarity if they are the same length. If identification is required, variation in length indicates a difference in distance from the cable to the terminal. Longitudinal position is indicated by the positional relation between the lead and the loops of twine. In the filter-assembly department, filter sub-assemblies such as those shown above (rt.) are put together complete by a single worker who assembles parts and finishes wiring in a sequence of operations set up for her by a technician. Minor variations in procedure are allowed for the individual convenience of the operator. Parts are disposed in radial rows of bins. In the production design of the unit, parts are arranged so that all solder points will be out in the open. The assembler can complete the wiring



• A few different types of filter units, of kinds used extensively in carrier gear.

of the filter, pick up her solder iron, and, in one operation solder all connections.

Filters, being frequency-sensitive devices designed either to pass or reject certain bands of voltages, usually required a tuning operation after or during assembly. This requires the precise matching of a pair of frequencies, an operation performed with unskilled help and a test rig.

Skill Simplified

The technical concepts involved here are of a complexity consistent with a full-scale engineering background but the actual setup has been made so simple that a totally inexperienced operator can be taught to make these determinations within a few minutes of her introduction to the problem. As can be seen, a standard unit is provided and clipped into the test rig. All the operator needs to do is clip the unknown unit to another set of leads and compare a meter reading (or in some cases an oscilloscope trace) from the standard with one for the unknown or production unit. This is done by throwing a switch from one position to another.

Necessary corrections in the production unit are made either by an adjusting screw or by removing turns of wire from a coil. In the latter case, care is taken in making the original coil to see that it always has more than enough turns so there will never be a problem of adding turns, always removing them.

On the main assembly line, usually the first worker's operation consists of mounting components on the base chassis. It is, of course, necessary to arrange the operations in such a way that approximately the same time is re-

(Continued on next page)

quired for each. Although no mechanical conveyor equipment is used, units are passed along the line on a progressive basis unless they are too heavy, in which case the assemblers move and the equipment stands still.

After the components, the cable is added and wiring begins, still with operations broken down to a few tasks—just enough to be readily understandable and to balance the work flow. A unit in this stage of assembly is shown in Fig. 8.

At the end of the assembly operation a technician inspector performs a "cold check." This means that he tests all wired connections with an ohmmeter to detect assembly errors. This operation is placed right at the end of the line so mistakes will be discovered immediately and the worker making an error can be corrected before a large number of units can be produced incorrectly. Units passing this test are sent to the final test department. Here, standard voltages are applied just as though the equipment were in actual operation. This is referred to as a "hot check."

Basic defects in components are discovered and corrected here before the units are wrapped and sent to finished stock, ready for later assembly into complete systems. There may, however, be a considerable time lapse between the cold and hot checks since there is no particular urgency about the latter in most cases and the setup of test equipment is often complex enough to favor close co-ordination with other tests.

Units may stay in finished stock as long as a year before being drawn out, mounted on racks and readied for delivery. At this point they receive still another check. The entire system is assembled and placed in operation. After it has been completely lined up and tested by actual operation, it is disconnected and shipped to the ultimate user with the assurance that any possible operating difficulty can only be caused by damage in shipment.

Considerable precaution is taken to reduce the possibility of shipping damage to the finished racks of gear. Each rack is floated on rubber mountings inside a sturdy wooden shipping box of special design, illustrated below.

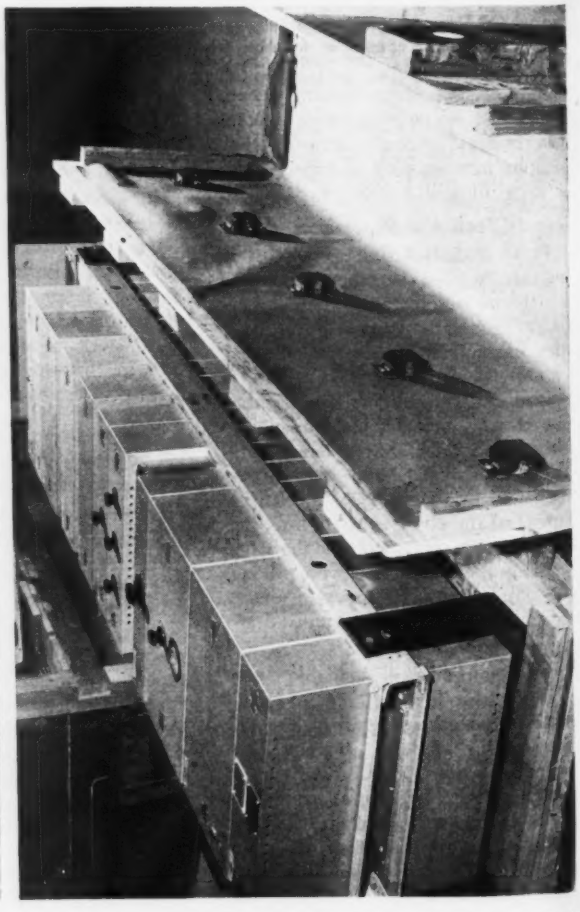
Brackets of $\frac{3}{8}$-in. steel formed into U-shaped supports are bolted to the sides of the equipment rack and secured by rubber mounting to the rear panel of the box. After the rest of the box has been lowered into position, a series of bolts is tightened along the two long sides to transform any side motion of the rack to a row of rubber mountings associated with the bolts.

Each of the holes visible along each side of the box contains a bolt which passes through the free member of a rubber mounting. The point of the bolt is tightened against the side channel of the rack. Thus, lateral movement of the rack causes a further deflection of the rubber in shear and a resulting cushioned resistance.

Mounted this way, the equipment rack is proof against damage from normal shocks in vibration in all directions. It is, however, not permissible to orient the box in such an attitude that the rack is hanging forward by the rubber members.

• Multiple winding machines are used in production of transformers. Remarkably close tolerances are maintained in this operation, which produces units not commercially available.

• Unique method of shipping Lenkurt carrier almost eliminates damage in transit. Intact rack is supported by black U-shaped brackets that are securely rubber-mounted to the skid.



• Complex shapes, parts made by Solar Aircraft's new technique in metal forming, show what can be done with low ductile alloys.

Low Ductile Alloys Form Complex Shapes, Using New Technique

By JOHN F. TYRRELL
Research Metallurgist
Solar Aircraft Company
San Diego, Calif.

THE awful screams emanating with the hot blasts from the tail end of the newer jet engines are only a mute echo of the sounds of the metallurgists when they read with dismay the requirements for metal needed to hold and control those power-packed gases.

No more will stainless steel, veteran with a glowing record of many thousand hours of red hot service in aircraft exhaust manifolds, be sufficient. Only the newer alloys that stay strong at extremely high temperatures can be specified.

Unfortunately for the metallurgist and fabricator these newer alloys were selected primarily for their strength at high temperatures, with little consideration being given their behavior at ordinary temperatures. Result has been that they generally have such low ductility that fabrication of all but the simplest shapes has normally been considered impossible.

At Solar Aircraft Company, however, effective blending of the art and the science of metal forming has resulted in the development of several new techniques which have made it possible to form even the least ductile alloys into the complex shapes required in various jet components.

Sol-A-Die, an exclusive method of making preliminary stage dies for the production of intricate, deep drawn shapes is one of the major factors that permit Solar to form practically any metal into shapes formerly considered impossible or economically impractical.

For example, when the stamping shown on pages 36-7 was first attempted on a production basis, only the most skilled operators were employed, yet four out of five stampings split out in forming. After adopting three preliminary stage dies developed by the Sol-A-Die process, the rejections dropped to less than five per cent for all causes, even with inexperienced operators. Material used for the production run was titanium stabilized stainless steel, A.I.S.I. Type 321.

Because this stamping is representative of many of the difficult shapes which Solar is called upon to produce, the Sol-A-Die set is now used to evaluate forming behavior of all new alloys before production begins.

In general, it has been found that the stronger the alloy is at elevated temper-

(Continued on next page)

atures, the more difficult it is to form at room temperature.

For example, comparative stampings of Type 321 and Vitallium prepared by conventional forming methods are shown below. Vitallium is a cobalt base alloy that has been used in cast form for such highly stressed parts as gas turbine blades that operate at about 1500°F.

Literally millions of these blades have been used successfully, which indicates that the alloy in sheet form would be ideal for many of the other critical sections of jet engines, except for its obviously low formability. Actually, no high temperature alloy as yet studied, other than Type 321, can be formed consistently in this die by conventional methods. The majority of them including even some of the cobalt base alloys like S-816 and L-605, can be formed readily without interstage annealing by using the Sol-A-Die technique. Even Vitallium has been stamped successfully although it did require three interstage anneals to eliminate all breakage.

Sol-A-Die process is simply an inexpensive and virtually foolproof method of making stage die patterns in less than half the time previously required, and, almost without exception, the dies produce successful stampings without costly reworking.

Its inventors, Lewis E. Burger and Jennings B. Skinner, decided that the normal methods of forming metal into deep drawn shapes almost entirely by stretching was too difficult on both the metal and the fabricator. It should be comparatively easy to produce the same shapes by a series of folding operations on a partially deformed blank of adequate size. In order to accomplish their objectives, they worked backward from the pattern of the final die. Even the most complex shapes unfolded to a stage where little or no stretching was required. They poured their preliminary die in that pattern.

To make the pattern, the final die is sprayed with a water soluble slip coat. Then beeswax, heated to a liquid state, and cheesecloth are applied in successive layers until about 3/32" thick. Threads of alternate layers of cheesecloth are usually placed at 45 degrees from each other. When the wax pattern is cool and rigid, it may be removed easily by lifting the edge and allowing water to dissolve the slip coat.

The Sol-A-Wax pattern thus formed, while flexible, is substantially non-stretchable and non-shrinkable. The pattern may then be unfolded and flattened the desired amount, and held in position on the modeling table with clay bolsters. The pattern is then backed with about two inches of plaster reinforced with jute fiber.

JOHN F. TYRRELL

• When this bolting flange was first attempted on a production basis, four out of five stampings split in the forming process.

• This difficult contour can now be produced commercially from vitallium, using unskilled operators and a Sol-A-Die pattern.

When this has solidified, the pattern is inverted, tilted to its best position with respect to the modeling table, representative of the hammer bed, and bolstered with clay. This forms the matrix of the Sol-A-Die pattern.

When more than one stage appears to be desirable, the process may be repeated. The original wax pattern may be used again, but it has been found more satisfactory to mold a new wax on the Sol-A-Die pattern just completed.

In sizing up the number of stages required to produce a complicated part, the Sol-A-Die operator is guided more by the ability of the part to nest in the next stage than by considerations of maximum stretching before annealing. In all but the most extreme cases, interstage annealing has been found unnecessary.

More complex shapes can be produced with Sol-A-Die than with conventional methods. It has been found possible in many instances to make tremendous savings in material and labor by replacing a unit composed of two or three stampings welded together, by a single stamping. A bolting flange formerly made from three parts welded together is shown above and on page 36. This unit weighs only fifty per cent as much as the previous model. It was produced at about one-third the cost. No interstage annealing was required in its fabrication from stainless steel.

A recent investigation conducted at Solar at the request of the U.S. Navy Bureau of Aeronautics has indicated that, with the high temperature alloys, the necessity for interstage annealing can be reduced even further if the temperature of the workpiece is kept under close control.

It was found that during the forming operation, areas subject to the most severe deformation tended to increase in temperature appreciable amounts. When this occurred, stretching was localized in these areas and caused excessive thinning of the metal and often resulted in cracking.

An additional peculiarity of these alloys was that they tended to increase in ductility as their temperature was decreased down to at least 100° below zero.

By combining these two characteristics of these two alloys, a processing schedule was developed that in some cases increased the formality of the least ductile materials over 100 per cent. The procedure used was to cool the blank in a bath of alcohol and dry ice to —100°F. and form it at that temperature.

The stamping warmed up appreciably during the forming operation so that it was found necessary to recool it after every three or four blows. Using this method of forming, the Vitallium stamping was formed successfully with two less interstage anneals than were required when it was formed at room temperature.

The resulting economies were due not only to the savings in furnace time but also by eliminating transportation costs and the pickling operations. The only expenditure is for dry ice and it has been found that for an ordinary production run of about four hours less than 50 pounds of dry ice is needed to maintain the bath cold enough.

Solar's continued research and development program on all phases of forming practices is a necessary adjunct to the ceaseless search for lighter and more efficient engines for aircraft. It has resulted in tremendous savings of fabricating costs not only of aircraft components but also in many other fields where corrosion and heat resistant materials are required in complex shapes with critical dimensions.

To Make Your Plant a Production Machine, Engineer Its Design

By GEORGE VERNON RUSSELL
Architect
Russell & Samaniego, Los Angeles

TIME is the yardstick of production and efficiency. Time consumed between receipt of the order and delivery to the customer may make the difference between black and red ink, on your books.

Wherever a plant is not designed to reduce this time figure to the lowest possible factor, and keep it there, the firm is bound to suffer constant and unnecessary losses.

But an even greater danger is involved: an enterprise in a badly planned factory cannot compete with a plant that has been planned and built as a machine for low cost production. Bad planning can break the moderate size operator quicker than a bad product. And good planning such as Republic Supply Co. put into their new building save 50 per cent of the time formerly used between order receipt and goods delivered.

A factory building is a machine for turning out production, and the same engineering principles must be applied to construction of a building that would be applied to construction of the machines in it.

It might be difficult to see any connection between reduced manufacturing costs and a factory (or warehouse) site, but in choice of location there lie factors that can be either a constant expense or a source of additional profit.

Only a competent architect is qualified to pass finally upon selection of a proper site.

In the case of Republic Supply Company of California, at Los Angeles, the site was chosen with the following qualifications in mind:

Proximity to sales outlets.

Transport (rail, truck routes, personnel)

Housing for employees.

Grade conditions which might affect building costs.

Exposure.

Proximity of storm drains.

Soil bearing values.

Zoning ordinances; set backs required.

Expansion possibilities.

Comparative land costs.

Public utilities offered.

Water, especially for fire protection.

Once the site had been chosen and word given to proceed, the staff of Russell & Samaniego, industrial architects, went into action. They made a preliminary study of the firm's needs, and such of their operational practices as might call for architectural planning to insure smooth functioning.

A special study was made of the company's, the customer's, and the common carrier's rolling stock. Height of the shipping docks and ease of vehicle manipulation are important.

• One of the important factors provided by competent architectural planning is found in the advertising value of your building.

• Flow of goods from raw materials into finished product stage is a determining influence on efficiency of labor-saving design.

Flow of raw materials to finished product was studied. Analysis was made of warehouse operations. Location of administration offices was considered.

All designing was based upon findings of these reports and analysis, after consultation with Charles Schriber, vice president of Republic Supply. Schriber's decisions were based on conclusions following conferences with department heads, who had examined and discussed these reports. Workers and executives alike felt that they were being recognized as a vital part of their organization.

Valuable suggestions were obtained for better operating practices. These suggestions might never have come to light except as "beefs" and dissatisfaction, if this procedure had not been followed.

Preliminary plans for the interiors were developed to the point of placing every desk and chair for each employee. Allowances were made for future expansion.

All business machines, files and other office equipment were indicated to scale on preliminary layouts. Warehouse binning, main aisles, heavy and light storage areas, and space required for them were studied thoroughly and established in these layouts. Even telephones were located in the plans.

Apart from establishing the functional plan, it was necessary to coordinate specialized engineering features. These include air-conditioning for the entire office area, plumbing, electrical and pneumatic tube systems. Features such as acoustic control, yard drainage, railroad trackage, and cranes for handling gear were studied and incorporated in preliminary study data. Provision was also made for vehicular traffic patterns, a public address system, and landscaping.

Truck docks were planned to accomodate different height vehicles. Runways were designed wide enough to allow easy fork-truck movement. A study of truck manipulation eliminated right-hand backing. This made assistance to the driver unnecessary (a constant saving on the productive time of one man).

A special rail-to-truck dock provided for shipping to branch stores without entry into the warehouse or breakdown of containers. Snatch blocks were located at frequent intervals on the docks, with ten-ton motive power. Coverage by this crane was provided throughout the heavy storage area, over 300 feet.

Connection to a future industrial craneway was provided to make an ultimate total of about 75,000 square feet under crane coverage. Outside storage area is covered by an 80 foot clear span five-ton crane without column interference.

(Continued on next page)

• Shipping docks should take into account trucks of different heights; loading platforms should be wide enough for easy access.

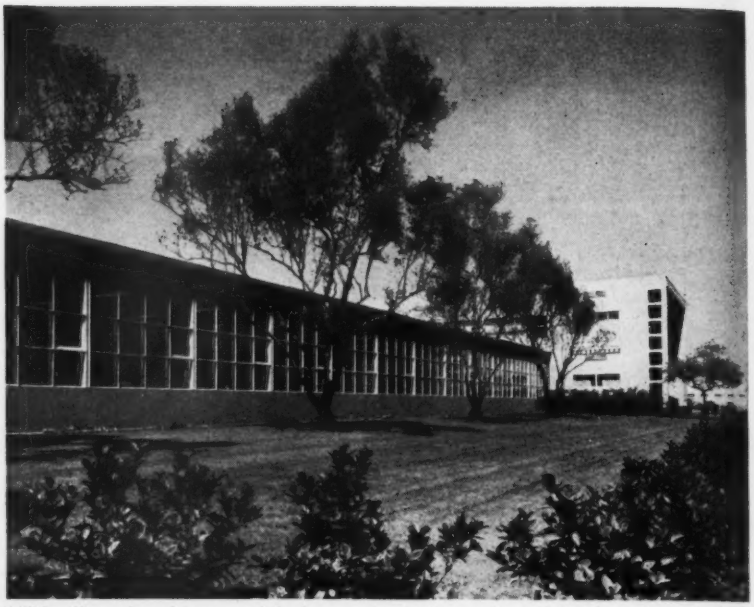
After determining orientation of the main building, a study was made of daylight conditions which would prevail in the plant.

Walls receiving hot south and west lights were marked for cool, compensating colors; walls receiving north light were scheduled for warm tints. It was decided to use overhangings only on sunny exposures.

Vertical fins were planned for the west side, where the light problem would be greatest. These fins are so placed that the afternoon sun will throw a shadow on west windows and reduce glare.

Since the salesmen spend but a short time in the offices, their quarters were located on the west side. Steady north and east lights were reserved for those whose work is most detailed.

In order to keep the economy factor at all times before both architect and client, the type of planned construction known in architecture as a "modular system of planning" was used. Under this principle of construction, "modules" or increments of five feet were used as the units of space measurement.



• This office wing shows good design, neat exterior, and provision for adequate light.

• This building was planned for maximum light, minimum sun. Vertical fins prevent the direct rays of the sun, yet allow plenty of daylight. West elevation of offices.

Adherence to this system simplifies exterior design and keeps lines of the structure in harmonious unity, with no reason for false fronts or blank window spacing. Such after-thoughts are often necessary to make a presentable facade in less carefully planned structures.

The architects then were ready to present the client for the first time with a "picture" of the building. This was in the form of a minature model of the entire project, built to scale.

Experience has shown that a working model is always the most satisfactory way to present an architectural project to the layman so that he is sure to understand it.

Cost analysis of several structural systems was made. Deliberately planned preponderance of simple surfaces and elementary forms developed under the modular system indicated use of prefabricated steel panels with concrete skin. These were chosen over the conventional masonry and reinforced concrete, showing a 15 per cent saving in basic structure cost.

One factor entering into cost consideration is the effect of materials selected on insurance rates. This called for consultation with the company's insurance agent as well as the client, so that rates, initial capital costs and interest were carefully balanced to add up to the client's advantage.

The design proved satisfactory to Republic Supply, and no changes were suggested. Complete detailed plans

• Aerial view of the entire plant. Adequate parking is provided. Railroad spur on left.

try's findings in this field for the benefit of his clients.

As for the comparative cost of planned construction over that of a ready-made shell, it may surprise many a businessman to learn that the shell of a building accounts for only about one-third of the average building cost. The interior and sub-grade work must eventually enter into the total cost. It is usually about 66 per cent, or double that of the building shell in the majority of cases. This figure, of course, varies according to conditions present.

Unfortunately, the designing of an interior for a ready-made building is always subject to limitations of the outside structure. Too often, this is totally unrelated to the needs of manufacturing process.

Finally, the advertising value of a well-designed industrial plant is a continuing factor, both from the institutional and attention value angles. It often has a definite bearing on product sales.

were made then, so that they might be let out for bids.

Because of explicit specifications and minute detail of the plans, there was a variation of less than ten per cent between the high and low bids among nine contractors. Most significant of all results, was the fact that the job ran $50,000 less than was anticipated.

The contract for building was let to Griffith Company, on a maximum guarantee-fixed-fee basis, with a proviso for a split of any savings, between the contractor and the company.

Again, careful planning paid off by the absence of "extras". On this project, "extras" amounted to less than one per cent, and this item was nearly offset by an agreement with the architect on minor features which saved three-quarters of the "extras" charge.

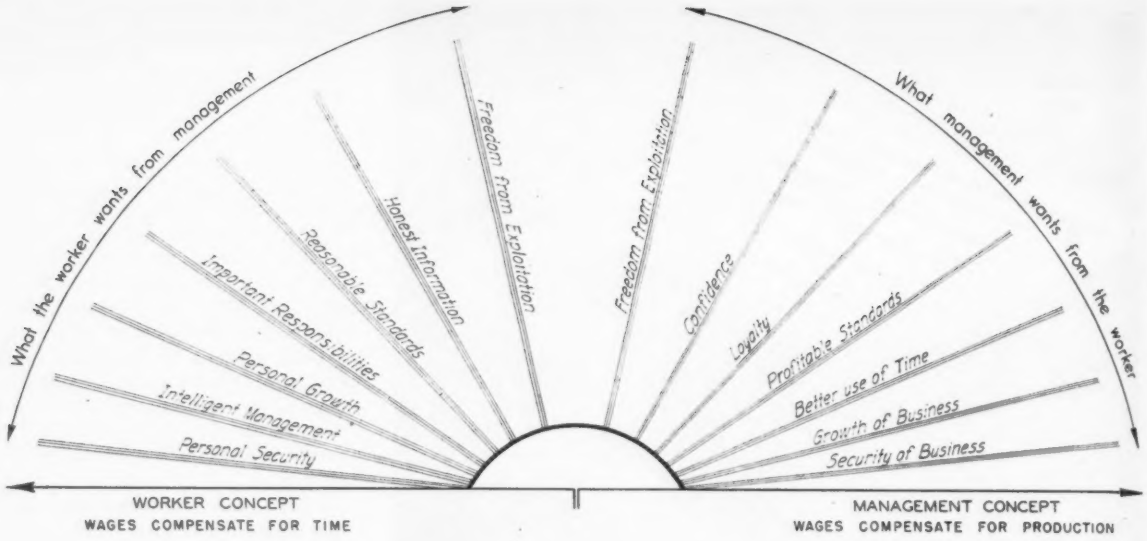
A bill for "extras" can be great enough to ruin the moderate size firm, or a fixed financial burden that cuts profit and raises costs.

Considerations pointed out thus far were all operational; but there are others, equally important. These points have to do with industrial relations and worker morale.

Such disturbing factors as poor lighting, violent light contrasts, colors in poor taste or of proven psychological influence, and dozens of other important considerations can be a means of cutting down efficiency of a worker in ways that are hard to trace.

Modern research has found ways to avoid such negative conditions. The industrial architect is in a specially advantageous position to make use of indus-

• Part of Republic Supply Co.'s general office layout, showing how good planning can effect orderly coordination between the plant and the "paper work" departments.



Raise Production by Gearing Your Policy to Employee Response

ON the basis that employees' opinions of the conditions under which they work are the real factors that govern their productivity, rather than management's views of the same situation, a system for improving the efficiency of industrial establishments has been developed by periodically checking employee reactions.

It grew out of an endeavor to determine the real reason why desirable employees quit their jobs, and was first evolved some ten years ago in private industry. Since then it has been further validated in the Navy's civilian personnel program by thorough tests at the Oakland Naval Supply Center. These tests of employee attitudes have not only enabled the Navy to increase work output substantially in a number of departments at Oakland, but the information revealed has been an important guide in shaping foremen's training programs.

The system was worked out by Joseph M. Sharp, a consultant, who has been in charge of the employee efficiency studies conducted at the Naval Supply Center. Its objective, as described by him, is to determine and make use of the "X Factor of Production," i.e., the difference in the amount of productive energy, initiative and loyalty the same man will expend if he is fully devoted to his job and is enthusiastically producing for the satisfaction he derives from his efforts.

JOSEPH M. SHARP

Why will John Smith put more effort into one job than into another on which he is equally well qualified to perform? Why will this same Smith put out more productive effort for employer A or supervisor A than he will for employer B or supervisor B? Why will he be less fatigued after a day's work for A than he will after a day's work for B?

Why will one company's production costs be higher than a competitor's doing the same type of work with the same facilities and paying the same wages? What explains the difference? Is it better methods, better manpower, better materials, better management? Is it a combination of all these?

The cause of the "X Factor in Production" according to Mr. Sharp, is the personal adjustment of the individual to his surrounding and his work. In a business or plant it is the collective adjustment of the employees to their environment, including supervision, and their work.

Surveys of various types of business have been made recently to determine the causes of collective maladjustment of employees, he reports.

"In one firm employing 2400 people a survey revealed that a poor quality of job instruction was the major contributing cause. Production records and personnel records verified the findings.

"In another company, with 700 employees, abuses of the principles of the mechanics of organization and human relations resulted in low interest and initiative, careless work and excessive turnover.

"Surveys covering 600 employees and supervisors of another organization revealed that there was excessive confusion, duplication of effort, buck-passing and unequitable distribution of responsibilities because it was overstaffed with executive and supervisory personnel.

"All of these business organizations were losing the benefits of the 'X Factor of Production,' and until they had diagnosed the reasons, they were throwing good money after bad money in efforts to stop the leaks."

Interview Analyses

A careful analysis of more than 3,000 skillful termination interviews revealed 44 conditions of industrial relations, that in various combinations, result in voluntary terminations. Those conditions were carefully tabulated and analyzed for

(1) frequency of the major reason for termination
(2) frequency of contributing reasons
(3) combinations with other conditions

The 44 conditions were then incorporated into a questionnaire with the groupings broken up and scattered. This questionnaire was balanced to determine the individual adjustment to the environment and work and the contributing causes to that adjustment. It was also weighted on frequency and reduced to relative numerical values.

Through skillful administration of the survey to an entire group of employees their individual adjustments and the contributing causes can be obtained. By averaging the employees opinions of conditions that inspire them and/or cause them to retard productive effort, an evaluation of the industrial relations program can be made.

For validation the survey has been administered to employees who were known to be well adjusted and as part of the exit interview of terminating employees. It was found in both groups that generally the same conditions existed but differed in degree.

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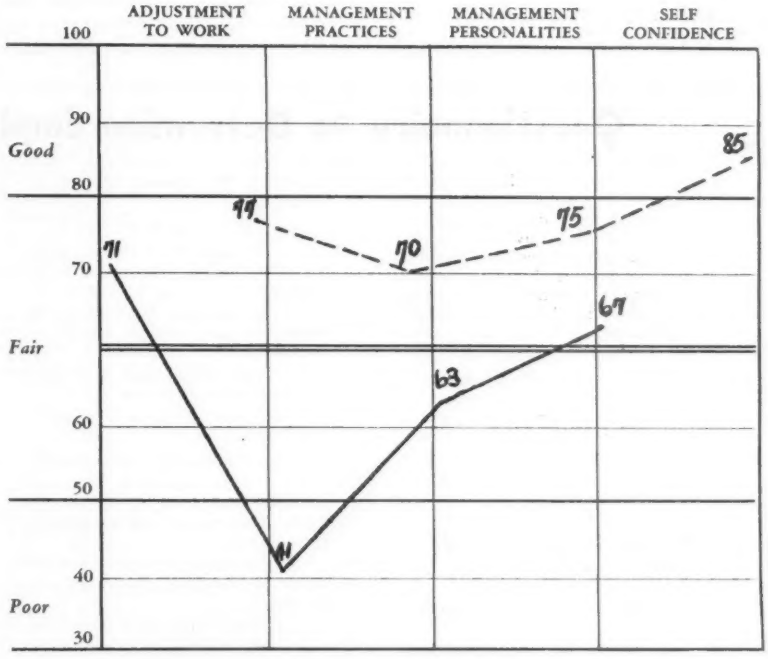
INDUSTRIAL RELATIONS PROFILE

For _____ Date 11 Jan. '49
Group A Number Tested 52

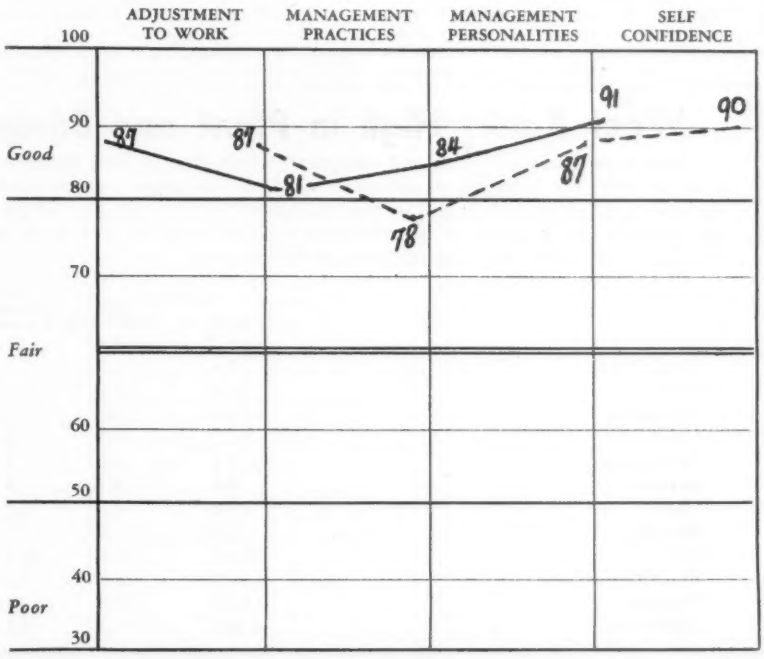


Group A: Ratio of supervision 1 to 4.6
---- 9 supervisors
—— 43 non-supervisory

Group B: Ratio of supervision 1 to 7.5
---- 7 supervisors
—— 53 non-supervisory

INDUSTRIAL RELATIONS PROFILE

For _____ Date 11 Jan. '49
Group B Number Tested 60



Composite results of the survey reveal the following:

(1) Existing conditions that inspire the employees to produce effectively.

(2) Conditions that retard effort.

(3) Areas of misunderstanding that are the result of inadequate communication.

The first group constitutes the industrial relations assets and the second and third groups are the liabilities. By analysis of these groups of conditions and impressions recommendations can be prepared to serve as a guide for making better use of assets to liquidate liabilities.

A re-survey six months or a year following the first will give management a measure of the improvement that has been made as a result of their efforts, provided that some intelligent effort has been expended.

Questionnaire to Determine Employee Reactions

(Employees called into the room, informed that a survey was being made for the purpose of enabling management to improve working conditions, and that management would receive only the combined figures, plus specific comments made by employees. No representative of management present while questionnaire was being filled out, and employees were instructed not to sign their names.)

1. What is your department number.....
2. How long have you worked here?
.....years.....months
3. Are you employed in an executive or supervisory position?
.....yes .....no
4. How long have you worked in your present position?
.....years.....months

Mark the following statements TRUE or FALSE—

5. .....I enjoy my work
6. .....My supervisor is interested in my progress.
7. .....I don't have enough time to get everything done.
8. .....My supervisor takes spells of being pleasant and disagreeable.
9. .....My supervisor is a driver.
10. .....I feel that I have security in my job.
11. .....Passing the buck is common practice.
12. .....I think about my job a great deal while at home.
13. .....Good work is appreciated.
14. .....We are encouraged and helped to learn all we can about the business.
15. .....A common practice of supervision is to threaten disciplinary action.
16. .....I am proud of my job.
17. .....My supervisor tries to cover too many points at a time when instructing.
18. .....Cooperation from other departments is as good as can be expected.
19. .....I am always told in advance of changes that affect me.
20. .....People above me seem to be under pressure.
21. .....I am unusually tired at night.
22. .....I have confidence because I know my work.
23. .....There seems to be a great deal of duplication.
24. .....Credit is given when due.
25. .....We have to play politics to get ahead.
26. .....There is too much confusion.
27. .....My job utilizes my abilities to good advantage.
28. .....My supervisor explains things in a way that it is easy to understand.
29. .....I feel that I have a good opportunity to advance.
30. .....Many employees on my level are dissatisfied.
31. .....I feel free to ask my supervisor any questions about my work.
32. .....How many immediate bosses do you have?
33. .....I frequently get irritated on the job.
34. .....My supervisor is a patient instructor.
35. .....Grievances are handled fairly.
36. .....I am marking time on this job until something better turns up.
37. .....The Navy policy seems to be fair and considerate of all employees.
38. .....Time on the job goes fast.
39. .....My supervisor expects people to know about things that no instruction was given on.
40. .....There is considerable "griping" among the employees.
41. .....I understand exactly what is expected of me.
42. .....My supervisor expects too much.
43. .....Supervisors are often bypassed.
44. .....My supervisor keeps me informed on new material, methods and procedures.
45. .....There is too much petty jealousy among the personnel.
46. .....I have a clear understanding of the reasons behind all instructions that are given me.
47. .....I like my supervisor as an individual.
48. .....I often get contradictory or conflicting orders from people above me.
49. .....Promotions are made on a fair competitive basis.
50. .....Give details of any complaints or suggestions that would improve operations:

West Ranks High in Plant and Equipment Investment

New manufacturing plant and equipment expenditures in the Pacific states for 1947 was 580 per cent greater than in 1939, the highest percentage increase for the entire country, and California ranked sixth among the states in total expenditures and in new machinery and equipment, and third in new construction. These statistics from the 1947 census of manufactures released by the U. S. Census Bureau, give the following figures for the eleven Western states, in millions of dollars:

	1947			1939		
	Total	New construction	New machinery & equipment	Total	New construction	New machinery & equipment
Mountain	95.0	33.3	61.7	15.6	6.5	9.1
Montana	7.4	1.7	5.7	3.0	1.2	1.8
Idaho	11.4	3.9	7.5	1.7	0.7	1.0
Wyoming	10.2	8.8	1.5	0.8	0.3	0.5
Colorado	32.2	8.4	23.8	6.0	2.4	3.6
New Mexico	5.4	1.8	3.6	1.0	0.5	0.5
Arizona	8.3	3.1	5.2	1.0	0.3	0.7
Utah	17.0	4.2	12.8	1.8	0.9	0.9
Nevada	3.0	1.4	1.5	0.3	0.1	0.2
Pacific	553.7	225.4	328.3	81.3	34.0	47.3
Washington	81.5	28.7	52.8	12.9	6.3	6.5
Oregon	61.7	23.4	38.2	9.6	3.2	6.5
California	410.5	173.2	237.3	58.9	24.5	34.4

TECHNICAL SHORTS

Simplification: A Function of Design

"Keep it simple" is an axiom of applied engineering, and a nice trick if one can do it and still have the device perform the service required. So speaks John L. Trebilcock, consulting engineer from Oakland, California, who goes on to inform us that the principle applies equally to the products of industry as well as to the processes.

We are currently offered new designs in products that have been simplified to the point of skeletonizing such familiar comforts as beds and chairs. Fewer parts, as a means of simplifying the manufacturing process, have been introduced with excellent results in lowered costs, and occasionally in better operating features.

There are dangers latent in the promiscuous application of the principle of simplicity, if due thought is not given to the equally important principle of flexibility. The temptation of design engineers, when confronted with a problem in simplification, is to throw out the old facilities and re-design from scratch. This might result in a better design but a bankrupt business.

Improvization—by which the old can be combined with the new, to produce a simpler facility retaining a great deal of flexibility for future modification—will most often provide the answer, which fewer parts alone cannot give. Where flexibility is not required, and where maintenance is not hampered by replacement costs of larger stampings, fewer and more functional parts are proving a boon.

The trend to the wider use of metal stampings instead of die castings, where feasible, is another simplification that yields advantages in lower initial costs, replacement costs, and increase in payloads because of weight reduction factors.

Simplification is accomplished in some plants by sub-contracting the manufacture of parts or sub-assemblies which would cost excessively in the parent plant.

Research directed toward providing more suitable materials, such as better alloys for corrosion resistant parts, has become an important factor in the search for a simpler maintenance formula.

Inexpensive Packaging

In a discussion of successful, inexpensive packages, J. A. Walls, manager of packaging research in Rexall Drug Co.'s merchandising division, offered the following enlightenment:

"During and since the war, the cost of wooden shaving bowls has risen to 18½ cents. We decided that we were going to have to do something about it, and for over eight months explored every possibility including pressed impregnated paper, molded pulp, as well as plastics.

"We finally achieved what we wanted in polystyrene, at ten cents. Normally, we use about 150,000 of these a year, so the saving amounted to about $12,750.

"Unit packaging, a field which is still in its infancy, offers tremendous possibilities of cost reductions in the packaging of many widely varied products. It also offers a new and unique package which is not only highly merchandisable, but also affords the customer utmost convenience in use."

Western Designed Telephone

A new and improved telephone instrument now in the final stages of development at the Bell Telephone Laboratories reflects the touch of a Western industrial design, Henry Dreyfuss of Pasadena.

The instrument is smaller and lighter than the set now in use, and it has better hearing and speaking qualities as well as a lower-pitched, more resonant tone to its bell. By means of a volume control, the user may adjust the loudness of the ringing tone to suit his needs.

The dial has the numbers and letter prefixes outside the finger wheel, and slopes at a lower angle, affording better visibility.

Information on Carbon Monoxide Absorber

By way of controlling the carbon monoxide hazard attendant to operating gas-powered fork lift trucks inside buildings, Research Advisory Service, of Portland, Oregon, set out to locate a muffler equipped with a CO absorber.

Queries addressed to a number of manufacturers elicited varied responses, including the two following, which seem to be most significant:

General Ozone Corp., Chicago, replied: "With reference to your problem, we do not know of any device made that will absorb carbon monoxide and handle the volume of exhaust gas given off by the average gasoline engine.

"Exhaust gas by no means consists solely of carbon monoxide. In a properly operating engine there are only very small amounts of it (in diesel engines there is even less); there are other constituents in the exhaust gas, however, that cause headaches, etc.

"Carbon monoxide has been measured up to 7 per cent of the content of the exhaust gas. With a little figuring you can soon calculate the size of the absorber required to handle the volume of exhaust gas. Your device would have to contain enough absorbent to take care of the carbon monoxide and at the same time be capable of handling 14 or 15 times as much other gas per minute, and in our opinion this would be a rather bulky device.

"Suggest that your inquirer check the air in the plant where their equipment is being operated to determine the carbon monoxide content. If it is above the amount allowed by the Industrial Hygiene Commission, then that would be one problem, but if the check shows that the content is below the toxic limit, their absorber would not be of any particular use."

Catalyst Research Corp., Baltimore, Md., wrote:

"We have been experimenting for several years on the problem of elimination of monoxide from the exhaust of gasoline engines. The basic principle of our device is the introduction of the proper amount of air into the exhaust stream and subjecting this mixture to an oxidizing catalyst.

"We have no standard device which could be submitted to attach to your existing trucks to eliminate monoxide. We are at present awaiting approval (5-16-49) on tests from the U. S. Government before starting manufacture."

Research Develops Explosion-Proof Heat Tube

Research into specific problems of one industry often leads to solutions of problems in other industries not even remotely related. This time, another Western industry—a Seattle paint manufacturer—has come up with a new type of heat tube which is (1) probably the most efficient radiant energy generator yet developed, and (2) explosion proof, according to their statements.

Preservative Paint Company set out to find a means of drying paint faster. Research in that direction took on such importance that an entirely separate laboratory was established. Then a new company, Radiant Ray Corporation, 5410 Airport Way, Seattle 8, was formed.

Their research developed the Merco Heat Ray Tube, as it is trade named. In ordinary use, this tube is mounted in a reflector, scientifically designed to permit a beam of heat (without light) to be applied against a surface at a very low angle of incidence.

Tubes, about one inch in diameter, vary in length from 12 to 47 inches. They operate on both 110 and 220 volts, at wattages from 250 to 1500. Their life is extremely long, and they enjoy an Underwriters' Laboratory listing.

Three main types of applications are contemplated: (1) big industrial units; (2) large portable units; (3) portable fixtures for small businesses.

Radiant Ray Corp. is producing a food warmer for restaurants, incorporating this tube. Units now in service are mounted about one foot above the serving counter. Their function is to keep food on served-up hot plates, until the moment they are picked up by the waitresses.

A big 32-foot drying oven is being installed at Fort Lewis, Washington, for use in drying finishes on the bodies of reconditioned vehicles and motors.

One of the major fields to be served is the automobile industry. Possibilities range from huge installations for drying finishes on assembly lines down to thawing out frozen radiators in the corner filling station. Refinishing jobs (knocking out dents in fenders, and repainting) can be thoroughly dried in localized areas in five minutes.

Further possible uses include quick cooking of foods in processing plants, preheating of laminated plastics in aircraft production, veneer drying, greenhouse heating, etc.

New Slag Technique Controls Zinc Oxide Emission

Robert Haley, owner of Advance Aluminum & Brass Foundry, explains to Dr. Louis C. McCabe (center) the elimination of zinc oxide emission by the use of Slag. Haley and Dr. McCabe were members of the Los Angeles Chamber of Commerce Atmospheric Purification Committee which assisted in organizing

15 industry committees to study ways and means to correct their smog problems. Charles Maxey, Production Chief, of the Peabody Company (right) also looks on. The two crucibles shown contain yellow brass at pouring temperature of 2400° F. The one on right has been allowed to flare and give off illegal zinc oxide concentrations while the other has kept fumes to a minimum by the use of the Slag Technique. This may prove a boon to small non-ferrous foundry operation by eliminating the need for expensive equipment to control illegal emissions.

New Boiler Treatment

Another by-product of the lumber industry has appeared on the industrial scene. It is a non-poisonous vegetable compound chemically neutral, reclaimed from the waste of red cedar shingle manufacturing and marketed under the trade name "Borgana" as a boiler treatment.

According to Alfred H. Schmidt, president of the firm, "there is raw material available (now being burned as waste) to produce enough boiler treatment to supply a major portion of the steam boilers throughout the country."

At present, the pilot plant is producing fifty 55-gallon drums daily. Mass production has not yet started.

Truck Handles Trip Handlers

Any kind of accident prevention requires the cooperation of both men and management, and experience has shown that the first move in this direction must be made by management.

But management does not always move fast or far enough, with the inevitable result that accidents occur, and the men involved become injured.

According to a safety bulletin issued by the Pacific Maritime Association Accident Prevention Bureau, during 1948 2.4 percent of injuries to longshoremen in San Francisco were attributable to handles on four-wheel trucks. In southern California, this percentage was 2.2, and in Puget Sound 0.8. On the Columbia River there was but one single case.

In three months of 1949 there were 11 accidents in San Francisco alone, caused by handles to these trucks. Of these, six men dropped the handles on their feet; three men tripped over the handles, and the other two men were struck by the handles while loading or unloading blocked trailers causing the front wheels and handles to swing.

Prevention of accidents of this type is dependent, to a large extent, on exercise of more care by the men themselves. But management could make it easier for them by some means of attracting attention to such dangerous weapons as these handles, by painting them a bright yellow. Then, they would stand out like the sore toe they might otherwise produce.

Unique Hydrogenation Plant

A unique hydrogenation installation has been completed at the Los Angeles plant of W. C. Hardesty, Inc., producers of fatty acids. Selective hydrogenation is the process used, using fatty acids instead of the glycerides.

Use of this new process makes possible production to precise specifications. Greater purity, uniformity, and stability are obtained. Poly-unsaturates can be eliminated or lowered to requirements.

Feature of this hydrogenation installation is that its source of hydrogen is dissociated anhydrous ammonia.

Extensive laboratory and small pilot plant work, in cooperation with the engineering department of the Patterson Foundry & Machine Company, preceded design of the equipment required to meet critical conditions in the handling of fatty acids. Actual fabrication of the equipment required more than a year.

Customers Show Package Preference

A DuPont survey reveals that 75 per cent of shoppers buy at least one item on impulse; 24.6 per cent of all items are purchased on impulse; 66 per cent of impulse items were on display.

Basing his discussion in part on this survey, Forrest J. T. May, president of Lucky Stores, Inc., Oakland, Calif., suggested that this presents a great challenge to the Food Industry, distributor, retailer, and manufacturer alike. The future may well be termed the "Battle of Brands" or the "Battle for Markets."

There is nohing unusual about a standardized glass package for preserves and jellies, universally in use today. There is nothing to attract the customer to the point of creating an impulse to purchase. Therefore, what could be done to create something new, novel, that would instill this urge to buy?

We (Lucky Stores) created an entirely new type and style of preserve container, packed under our own label, in a glass pantry bucket with a metal bale handle. We went one step further and created labels in various colors to correspond to the color of the jelly or preserve.

The customer's attention is arrested on sight of this display; the product is picked up, and in the majority of cases the sale is made. The consumer preference in this case is made for her, regardless of the fact that name brand products are displayed in close proximity to the package in question.

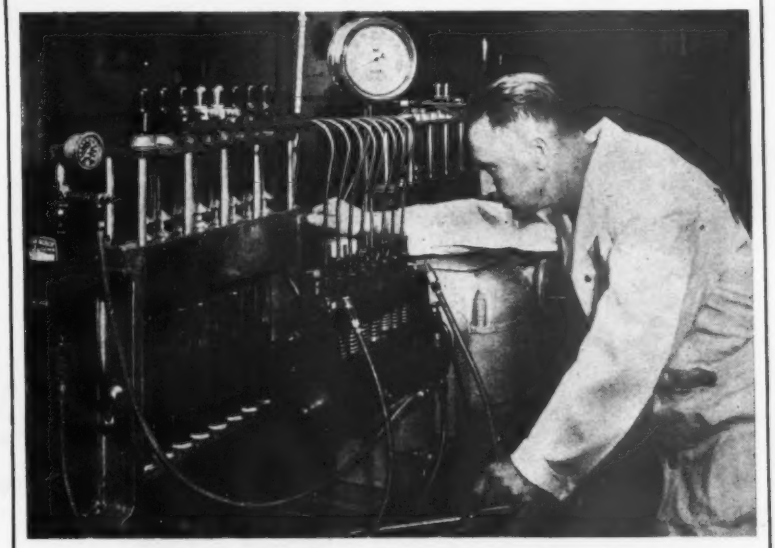
In view of the fact that preserve sales over the country showed declines, our sales increased materially. The answer to this reversal of sales trend is entirely attributable to the creation of eye appeal plus impulse appeal, plus sales appeal packaging, all of which adds up to impulse sales.

Adjustable Speeds For Operator-Fed Machines

Speeds of operator-fed machines should be adjustable, and if possible set at the speed which will allow each operator to perform at his optimum rate, according to D. G. Malcolm of the University of California mechanical engineering department. His assertion is based on tests of the effect of machine speed on operator performance, from which he drew the following conclusions:

(1) The operator's subjective feeling concerning his production rate is misleading as an estimate of his actual production.

(2) The "production versus machine speed curves" for all operators are similar, showing a gradual leveling off of production as speed is increased, a peak and finally a sharp drop.



HEART DOCTOR FOR DIESEL ENGINES

This recently developed test stand, designed to calibrate diesel fuel injection pumps, and developed by Automotive Products, Inc., Portland, Oregon, is being placed on world markets by that firm.

Previously made to order, the stands are to be manufactured in an enlarged assembly shop at the home plant.

Stanley McKinley, a partner, is shown checking the amount of fuel being pumped, before making a delicate adjustment. After this calibration, exactly the same amount of fuel goes into each cylinder.

Some of these stands are already in use at diesel engine manufacturing plants.

(3) All operators but two reached peak production when their machines were operating at approximately the same speed. The two who lagged had difficulty training their left hands. This suggests that the variation in speeds at which maximum production is reached would be much smaller with operators more fully trained than the students used in the experiment.

Assuming that the principles brought to light in the experiment are valid in the industrial situation, Mr. Malcolm, speaking before the American Society of Mechanical Engineers at its semi-annual meeting in San Francisco suggested:

"Whenever the machine's speed is determined by the operator, school him in the fact that his total production will continue to rise as he increases the machine speed even though he misses more opportunities and feels that he is producing a smaller amount. This is necessary because too often his subjective feeling will cause him to settle for a speed below his optimum. If a piece-rate wage incentive is used, this new approach should not be hard to prove to the operator.

"When a supervisor is responsible for setting the machine speeds, make experiments to determine the speed at which each operator can produce the most. The maximum production speeds very likely will be quite similar but each machine still should be set at the individual operator's optimum speed.

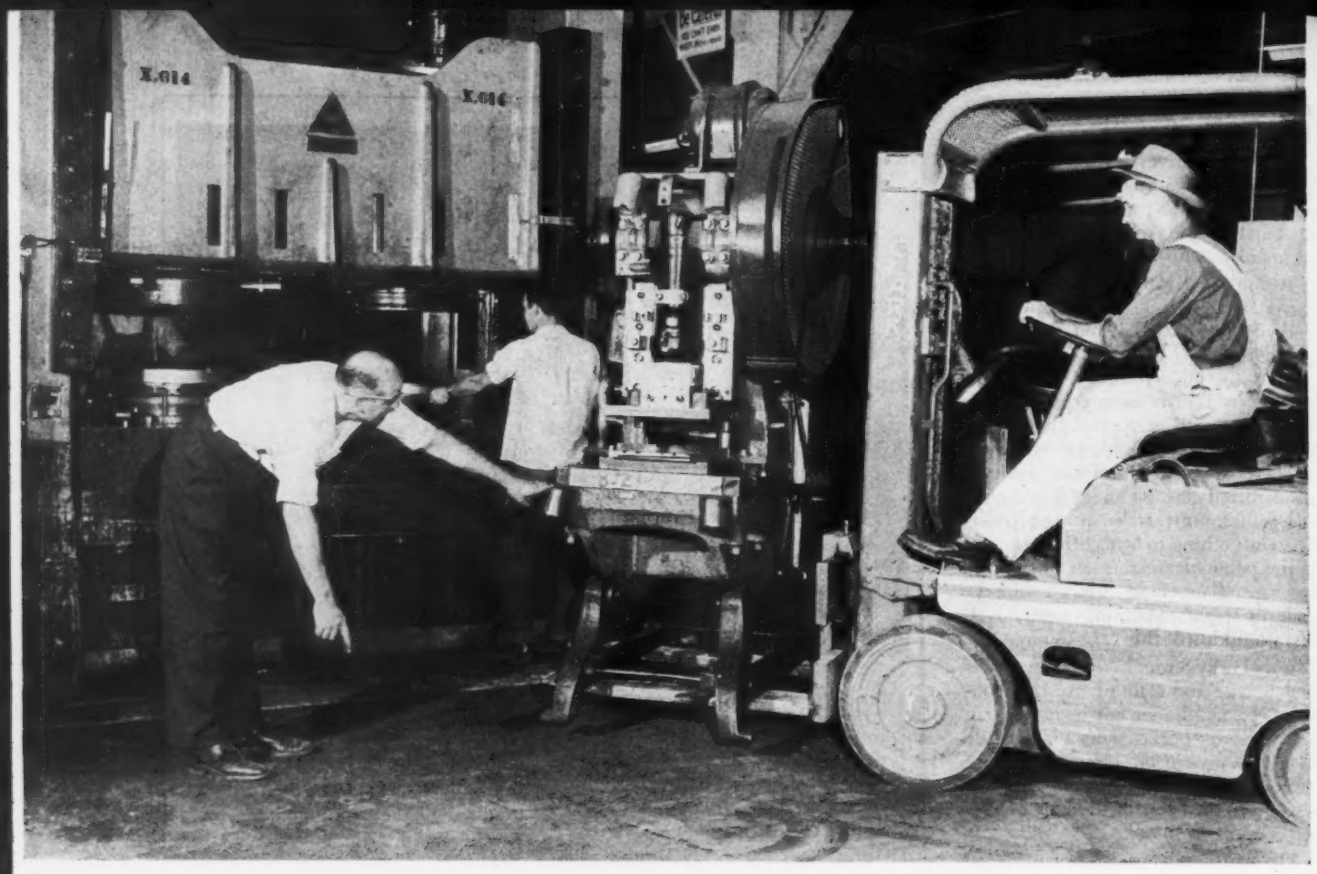
"When machines of this type are not adjusted, it would be wise to have machine designers incorporate the adjustable feature. Each operator should have the opportunity to adjust the machine he is working at to his optimum speed. Allowance should be made for individual differences that exist in the workers who operate production machinery."

Flying Electricity Generators

Air-turbine driven generating equipment is now incorporated in modern flying-boat-type aircraft, to meet increased operational requirements of electronic and armament equipment carried aboard, according to E. F. Kotnik, design engineer for Consolidated Vultee Aircraft Corp., San Diego.

Installation of auxiliary gas turbine compressors in the planes will provide air to the engine air-turbine starters as well as to the remotely-mounted air-turbine driven generators.

Exhaust from these turbines is utilized as the source of heat for anti-icing purposes and for additional cabin heating.



• It's cheaper and faster to take the tools to the most efficient points of operation than it is to move goods about the shop to tools required. Here is a fork lift truck in process of moving a 21 Bliss (35 ton) punch press close to a Clearing press at Northwest Metal Products, Inc., Seattle, Washington. Foreman, at left, shows the lift operator where to drop press.

Moving Machines Cheaper Than Moving Goods, on Short Runs

MATERIALS handling ordinarily means transporting raw material, components or finished product from storage or receiving dock to machines for processing and thence to warehouse or shipping dock. At the Northwest Metal Products Co. plant at Kent, Washington, it means also using lift-trucks to move the presses themselves (on which the processing is done) into new positions, as varying situations require different groupings in the cluster type of operations employed there.

Northwest Metal Products are the largest manufacturers of oil floor furnaces in the Pacific Northwest. They also make circulating space heaters, utility room furnaces, rural mailboxes, conductor pipe, garbage cans, wheelbarrows, scooters, and a large assortment of metal stampings, sub-assemblies and other items supplied to other factories.

As the result of having such a variety of products, involving runs of various lengths, the primary production requirement is flexibility. Sometimes it may be necessary to have presses in one group for only a matter of days; in other cases the set-up may be fixed for months; at still other times the cluster of movable presses may be grouped around a big press that requires special foundations and therefore has a fixed position.

A typical cluster set-up involving a fixed-foundation press makes the front fender of a scooter. This requires one blanking operation, one difficult deep drawing operation and three subsequent trimming and piercing operations. The last run was for 90 days.

For this a fixed Clearing press was used as a center of production where the deep-drawing is done, with a 75-ton Bliss for the blanking, and a 93-ton Bliss, a 60-ton Bliss and a 35-ton OBI Bliss for subsequent operations.

One advantage of the cluster is that it is a complete unit in itself, eliminating the necessity of trucking and conveying between operations. Another is that quality control is much simpler. Failure of parts to adjust with each other is more quickly detected, and elaborate checking systems, to prevent such misadjustment resulting in heavy losses of material or in rework, becomes unnecessary.

If adjustment in one of the dies is required, the die is nearer the assembly point and the change is easier to make and to prove. There is also less likelihood of parts that do not fit being run

off. In other words, operations relative to fit or size involving the relation of two or more parts with each other are tied closely together and control of dimensions becomes easier, because each subsequent operation reveals the faults of the previous operation.

Moving the standard punch presses from one spot to another is an ordinary lift-truck job, hardly requiring more time than handling the material, parts or finished product. In the case of a 90-ton press, weighing probably eight tons, the overhead flywheel is removed to keep the press from being topheavy when lifted. Then both of the plant's electric lift-trucks handle it together, taking hold from opposite sides, high enough up to get sufficiently near the center of gravity, one truck moving forward and the other backing up. This job takes about three quarters of an hour, as compared with days when the press has to be moved on rollers.

Northwest has two Clark electrics of 6,000 lbs. at 25 inches capacity. The company's preference is for the quietness, lack of odor and low maintenance provided by the electric type.

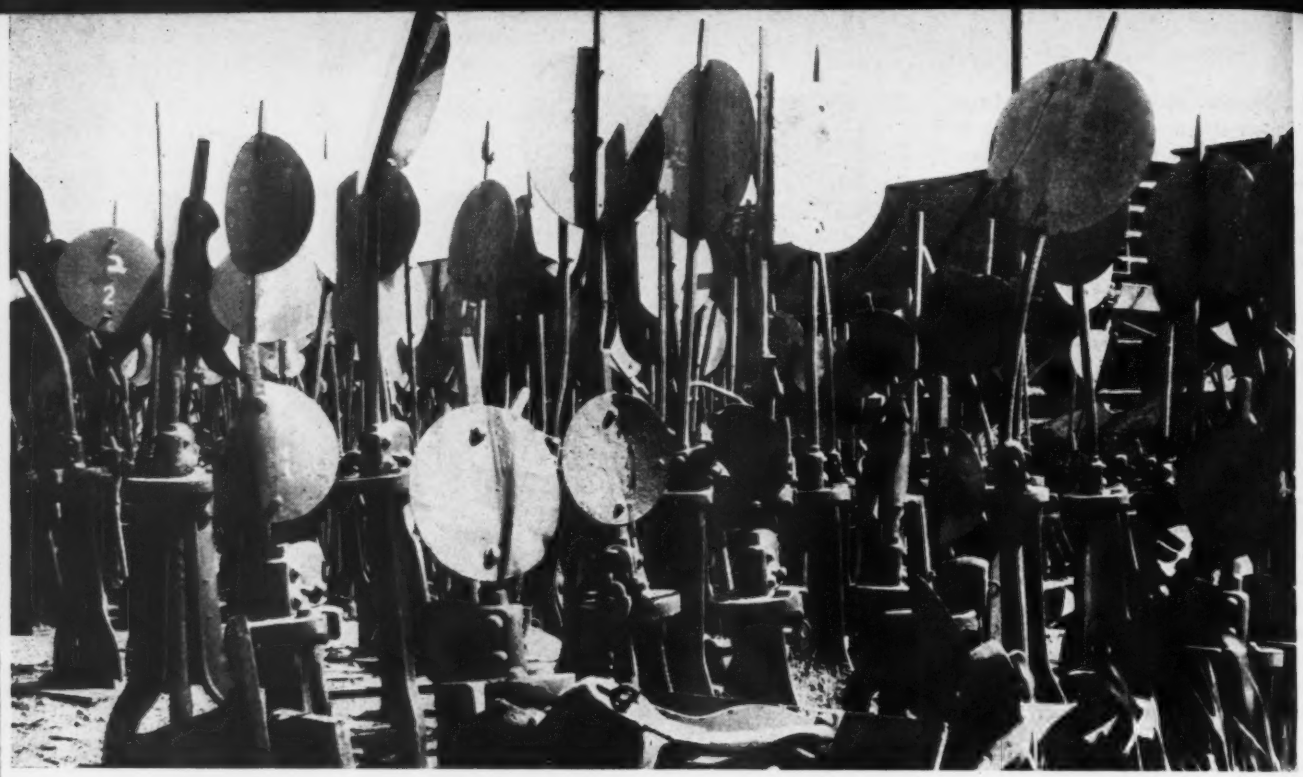
A novel device developed in the plant that is particularly handy for storing tubing is a metal frame-shaped pallet balanced on a pair of wheels in the center. These pallets can be stacked in tiers by lift-truck and can be moved around the plant by two men.

No opportunities are overlooked to save time and labor through good materials handling methods. Inside the range of each cluster, and between fixed assembly and storage or outgoing shipment, flats are utilized. In the tooling department there is an overhead crane and hoist system for lowering and raising parts and dies. This on the principle that the opportunity to move the dies in and out many times permits good fitting with less trouble than if the operation is less flexible. In the Parkerizing process a four-way crane hung from a monorail is used. The pickling tank for galvanizing is equipped with a rack operated by crane and hoist, which permits lowering a whole basketful of material into the tank at once.

The various materials handling methods were developed by A. F. Parker, vice-president, and A. J. Kootz, plant superintendent. Northwest Metal Products practice materials handling also to the point of having an accounting classification set up for it. Parker says this means nothing, that it contains only "a lot of cats and dogs," but how many factories have even gone this far in their accounting?

• Lift trucks are indispensable in a cost-conscious operation such as this. Here is a Clark truck loading furnaces directly onto car in the plant at Kent, Washington.

• Result of moving machines close to each other is a cluster operation such as this. An efficient set-up, it shows certain concluding steps in the manufacture of water pails. Bottoms are inserted and stamped in; beading is done; ears are welded on by electricity. Then the pails are taken to be hand-dipped as a final finishing operation..



• This may look like a forest to you, but it looks more like money in the pocket to Union Pacific Railroad. These iron switch stands represent only a fraction of the hundreds of items awaiting repair at the railroad's reclamation plant at Evanston, Wyo. Salvage operations here, a new wrinkle in railroading, save firm more than an estimated $1,000,000 yearly.

Unique Salvage Operation Saves Company $1,000,000 Yearly

MAKING money and spending it are two phases of railroad operation that have managed to make frequent headlines for some long time. Now there is a phase of Union Pacific's operation—a reclamation plant at Evanston, Wyoming,—where the main objective is saving money.

This plant, unique with U. P., saves the road an estimated $1,000,000 per year. A staff force of 166 persons operates it. There are 47 office and store employees, and 119 who work in the mechanical departments. This force is engaged in carrying out six major functions. They are:

(1) General overhaul and repair of all heavy work equipment on the railroad, including locomotive cranes and drag lines;

(2) Repair of all pneumatic tools for the system;

(3) Repair of all brake beams;

(4) Repair of all shop jacks;

(5) Source of supply for all track tools, both new and repaired;

(6) Repair of 600 other items ranging from baggage carts to tinware.

Much of this enterprise is done on an assembly line basis, with good degree of success. For instance, last year the following items were handled: 26,787 brake beams, 32,000 ballast tamping bars, 81,242 clay picks, 41,765 air brake hoses, and 11,498 train line angle cocks.

Assembly lines for picks, air brake hoses, and brake beams have been developed to a particularly high degree of efficiency. Operations are set up in line, and men are specialists on each operation. The item-in-process-of-repair passes from one step to the next until it is finished, tested and turned over for shipment.

Picks, for instance, are heated, 50 at a time, in a baffle-type slot furnace to a temperature of 1670° F. They are then transferred to a mechanically agitated quenching bath (80° to 90°F.). Third step is a 650° salt bath where the picks are drawn to required brinnel hardness of 425 to 500.

Stripping of defective and worn brake beams is done in the plant yard. Assembly operation, requiring a five-man team in the roundhouse, consists of four steps. They are: (1) primary assembly of rod, back, heads, and strut;

(2) tightening; (3) testing; (4) transfer of the assembled brake beam from the test machine by air hoist to a skid. A skid load is 100 brake beams.

When air brake hose is stripped, a pneumatic shear cuts off the fitting nuts. Then a stripping machine pulls out the fittings. The old hose goes to scrap, but the fittings are reclaimed.

When the hose is assembled, fittings are put on with an air press. Then the clamps are tightened with an impact wrench.

Everything that looks like junk at this plant does not necessarily become junk. For instance, old wheel tires are made into spear points for tamping bars. Discarded flues and scrap air pipe are turned into snow fence stakes.

In the plant, materials handling is efficient. Most small items are stored in bins to keep them off the ground so they can be handled easily by lift trucks.

Oxygen from centrally located cylinders is piped throughout the area. So is acetylene gas.

All impact tools are tested by the Magnaflux method. Brinell equipment is available for hardness testing. A pneumatic tool test rack gives repaired pneumatic tools a factory test. Tool efficiency is calculated from a load scale, a tachometer, and a Jersey Flo-Meter for measuring consumption.

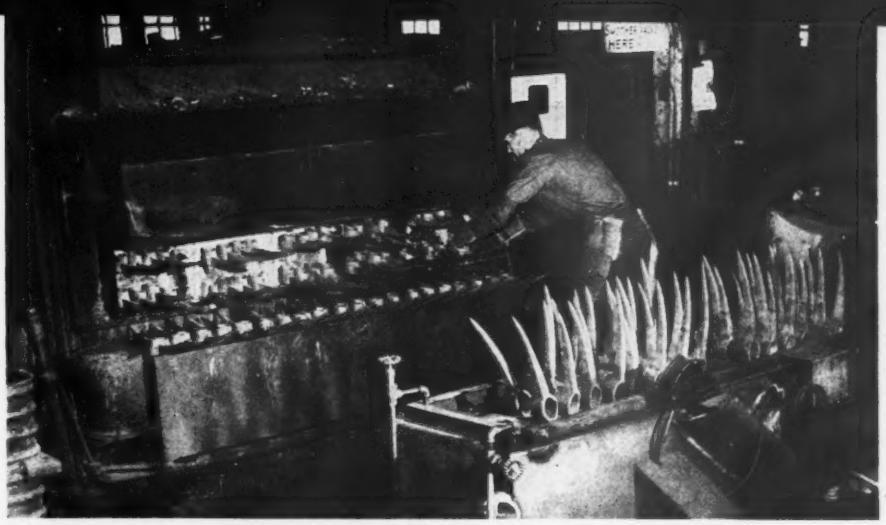
A feature of this reclamation plant is the presence of its own shop cost accounting system of repair items. This has the main purpose of determining shop costs to avoid uneconomical repair or reclamation.

Heart of this system is a card, known as "Form 6368". One of these cards is carried as a permanent record for each item of material handled. Each lot is done on order in the quantity required.

When the work is physically completed, labor and material charges are accumulated. To labor is assessed the shop overhead; to material, the material handling charge. This accumulates the entire charges against the order. Then, that figure is divided by the quantity completed, giving the cost of each item. Individual (average) repair cost is compared to the current market purchase price for a comparable new item, and the saving is figured.

On this record appear both money and man-hour values, thereby enabling careful study of each operation on a man-hour basis for better shop control.

Every item in the yard is on stock record, whether new or not. This system permits close coordination of purchases of new material in the light of repairable material on hand. For the most part, no repairs are made except to fill requisitions.



• This baffle-type slot furnace (background) heats 50 picks at a time to 1670° F. Mechanically-agitated quench bath (foregr'd). Last year they salvaged 81,242 picks.

2-49-5M Form 6368

Year 19____

Cost and Production of Articles

Name of Article

Cost New

Scrap Value

Month	Order	Quan.	Scrap Value	Labor	S. E.	Mat'l	MSE	Total	New Value	Diff.	Cost Ea.	Man Hrs. Ea.
Total												

• One of these cards is carried as a permanent record for each item of material handled. Average repair cost is compared to current purchase price, and savings figured.

• This five-man team is engaged in assembling brake beams. The two men at right are assembling rod, back, heads, and strut. The three men at left are testing and hoisting the brake beams onto a skid. 26,787 brake beams were salvaged last year.

• Wood clamps used to assemble molded plywood parts of take-your-own photo booth.

• This press, using metal-shielded wooden dies, is used to mold small plywood contours.

New Process for Plywood Molding Trims Competition

MANY Western factories produce plywood panels for structural use, but only a few mold contoured plywood articles. Short production runs and consequent high tooling costs are limiting factors.

However, use of a new and unusual production setup enables at least one Western firm to reduce these factors to a negligible amount. Customers report that (in view of cost estimates for job shop contracts) Glenwood Manufacturing Company's prices are lower than their competition by a margin varying from 10 to 50 per cent.

This young organization, at Burbank, Calif, is owned and operated by Paul R. Williams and Walter C. Roberts. Williams is a design engineer who developed many of the tools and techniques used in constructing Howard Hughes' giant plywood seaplane at Culver City, California; Roberts is a veteran production executive.

Most of the firm's success can be attributed to the efficient use of new type molding equipment, which occupies a third of the 3200 square foot plant area.

Nucleus of this equipment is a battery of 18 hydraulic presses. All were made to order, with aircraft-type hydraulic units so that they could be powered by a centralized power source. A 100-lb. pump driven by a seven and one-half horsepower motor supplies that requirement.

Molds or dies for the presses are built up from prefabricated wood contour blocks. They are shielded with stainless steel sheets, so that moldings can be electrically heat-cured without danger of adhesion to wood tooling surfaces.

These molds can be assembled and put into production faster than the cheapest types of plaster tooling, yet they are as durable as most metal dies for plywood molding processes. Laminated dies are said to maintain consistent dimensional tolerances of 1/64 of an inch, even on long production runs.

Wood dies readily withstand plywood molding pressures of 125 to 150 p.s.i. They are not susceptible to heat

damage (curing temperatures run from 175 to 210 degrees F), since the stainless steel shields are used as electrodes for highly localized forms of dielectric or resistance heating.

Birch, oak, maple, and many other types of hardwood veneers are used as laminate for molding operations. They are usually brush-coated with Weldwood, a thermo-setting phenolic adhesive, and stacked one-over-the-other. Lamination continues until moldings of specified thicknesses are produced. These normally range from 1/64 to ¼ of an inch.

In a few special instances, where no assembly or finish-processing of molded articles is desirable, the veneers are resin-impregnated before molding. This provides both adherence and a protective coating in one press operation.

Stacked laminae for moldings are sandwiched between metal die shields so that curing heat and pressure can be applied with these presses. All press operations are independently controlled, though hydraulic pressure is supplied by only one pump.

Because phenolic adhesives can unite wood layers with more bond strength than natural tree resins, the moldings can be sanded, sawed, or machined the same as though they were carved from individual wood blocks.

When it is necessary to assemble moldings to produce finished articles, the usual practice is to coat mating surfaces with phenolic adhesives so that curing pressure can be applied with wood clamps and nails.

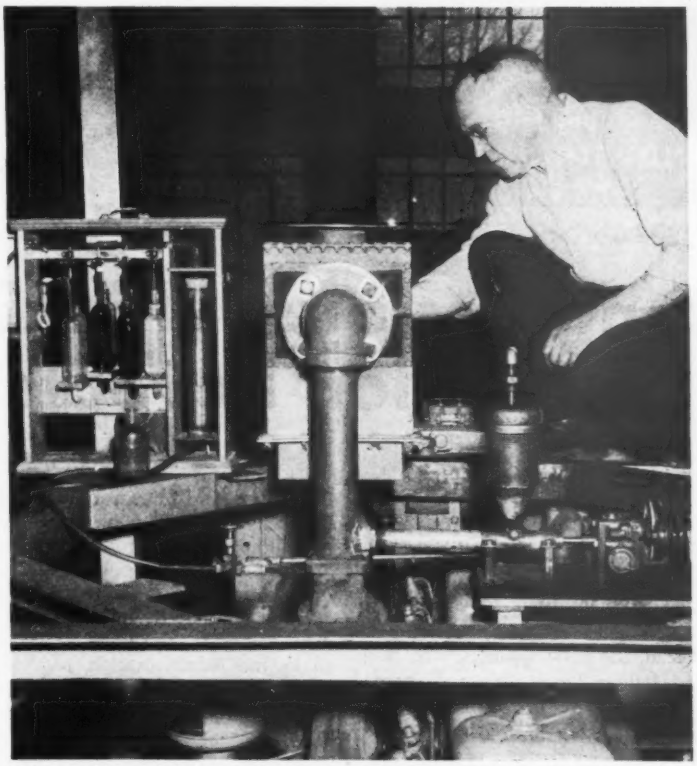
In such cases, infra-red lights are used to heat-cure the joints on assemblies.

If moldings are not resin-impregnated as previously indicated, molded articles or assemblies can be finished with any of the coatings normally applied to wood products. However, since it is generally desirable to retain the hardwood grain appearance, finishing is usually done by spray coating the surfaces with clear laquer or plastic.

Clear laquer finishes, preferred because they are comparatively inexpensive, are used to coat articles requiring no more than protection of the grain against scratches or marring.

Acrylic and related types of clear plastic finishes are specified when, for instance, the articles must be waterproofed, such as salad bowls.

It is difficult to compare Glenwood's fabrication costs with the manufacturing costs of competitive organizations, since competitive companies produce few completely analagous products.



• Apparatus at left for analyzing exhaust gases—another study apart from spark arresting. Hopper for feeding particles of carbon in center. Professor Gauss on the railing, beside a D-13000 Caterpillar stationary motor. This view of engine shows thermix spark arrester installed, and feeder mechanism.

THE usual high, summer-time fire danger in northern Idaho forests prompted the University of Idaho in 1947 to start investigating the efficiency of spark arresters used on internal combustion engines in the woods. Such engines are essential to getting out logs, on trucks. tractors, loaders and as stationary power sources.

No satisfactory evidence could be found proving Diesel motors entirely safe as regards incandescent matter discharged with the exhaust and the consequent setting of fires. Therefore, Diesel engines were the first to be investigated by Professor Henry F. Gauss, head of mechanical engineering at the university, and research assistants. Their work was assigned university special research project number 7.

Fourteen commercial spark arresters of different makes were subjected to uniform tests, with a known amount of carbon particles fed into them while a new, un-carbonized motor was in operation and emitting exhaust fumes. All of these showed wide variation in performance. Usually those which retained a large percentage of carbon exerted a back pressure on the motor greater than an allowable 10 inches of water. This last is measured on a manometer connected to the exhaust.

An improved design was then made in university shops. Several Aerotec tubes, manufactured by the Thermix Engineering Co., Greenwich, Conn., for use in industrial dust collectors, were incorporated in an arrester. The number of Aerotec tubes can be varied according to the efficiency and back pressure desired. The design of arresters is very flexible and can be adapted easily to available space. Carbon can be removed periodically. The arrester need not be discarded after long service.

Tests of this design using Diesel motors showed efficiency in retaining particles of carbon as high as 95 per cent for 10 tubes, with a back pressure of 10 inches. The new design also held up well under all other tests made thus far.

Further research on desirable qualities using gasoline engines is going on at present. Incandescent sparks are known to be more of a problem with gasoline motors.

When work is completed, results will be publicized in a suitable bulletin available to those interested.

LABOR
and the
INDUSTRIAL WEST

(By Western Industry's Labor Relations Analyst)

Congressional Thinking on Labor Legislation Revealed at Tahoe

THE theme of the industrial relations conference at Lake Tahoe in September, held under the auspices of the California Association of Employers, was to have been "Creating Better Understanding of Industrial Relations."

Instead, the guest speakers, who included Fulton Lewis, Jr., and three Congressmen fresh from Washington, turned the meetings into a seminar on labor relations legislation and the threat of a more-than-now labor government to be followed by some sort of welfare state.

Program Switched

This switch in the program was met with rapt attention by the 200-odd people present, mostly labor relations professionals on the management side from the West. Many of them had in wartime learned the facts of Washington life in regard to labor relations, and so were active questioners.

To the employer-men the reports of the experts were good and bad. A majority in the House of Representatives, consisting of Republicans and Dixiecrats, called "Demo-Gops" had combined to fight the main features of the power-grabbing program of the administration and of the labor unions.

Political Battles

The defensive and decisive battles in the campaign were fought out in the House Committee on Education and Labor, of which the Hon. Samuel K. McConnell, Jr., of Pennsylvania, is the ranking Republican member and the Hon. Thomas H. Werdel, of the 10th California District, is another minority member. Both related their experiences in attempting with other Republicans and southern Democrats to offset the Administration's program, while acting on a committee consisting of 16 Democrats were neither direct union agents or attorneys for unions.

This was done, mainly, Congressman McConnell said, by substituting alternate bills instead of fighting the majority, although the record related told of some serious battles behind the closed doors in executive sessions. They were aided in this maneuver by the policy of organized labor, which had been adopted by the Administration, of "all or nothing" in connection with the repeal of the Taft-Hartley law. This dog-in-the-manger attitude lost to labor the betterments, from their point of view, which the Congress would have given them in rewriting the law.

Since 1938, Congressman McConnell stated, those in charge of the Fair Labor Standards Act, had violated the Congressional intent, with the help of the courts. Such ideas as "overtime on overtime" for a window washer and a gardener under the Act, and all sorts of other encroachments, were clearly not intended by the Congress, but suited some bureaucrat who had other things on his mind than following the ideas of Congress.

Process of Elimination

This Congress re-wrote portions of the law trying to stop these extra-legal practices. It also defined those covered more clearly and believed that all strictly retail sales and service organizations operating within a community now were exempt.

Administration Democrats approved a 15-week exemption to the Louisiana sugar industry from the Fair Labor Standards Act, as a political move. Now this industry can employ their Jamaican negroes for 80 hours a week, during this period, and pay them as little as 20 cents an hour. Yet the same act is being used to penalize employers in the North, who are already paying common labor in excess of $1.00 per hour. Congress did not intend the FLSA to be used to set industry minimum wages greater than the statutary requirements, but it is being so used now.

Employers and their groups, he said, should study the background of the American form of government; study proposed legislation, take an active interest in politics; join a party and work with it, even to the point of ringing door-bells, in behalf of their beliefs. Help select candidates and when they are elected remember to help them afterwards. Help get the simple truth to the public, as there is so much misrepresentation in the public news from Washington.

Here's Your Impetus

For those who feel their efforts might be of little consequence, he reminded his audience that twelve men, after their Leader had gone, founded the entire Christian era, and that ten men, at the most, were responsible for the founding of the United States as an independent nation.

George Shellenberger, program chairman, and executive vice president of the Merchants and Manufacturers Association of Los Angeles, told the audience following the oration of Congressman McConnell:

"If we could urge individual employers to start programs of communication with employees, such actions would be very helpful in this overall problem.

Tell All

Individual companies should write down their policies and give these wide distribution in their plants and throughout the community. They should tell their supervisors all about things. They should remember that an employee who spends most of his lifetime working for a concern has maybe a stronger interest in the company and its welfare than even a stockholder."

Congressman Werdel, California:

Business, industry, and the common people, now face a new kind of Trustee. (He used this word in its early Eng-

(Continued on page 56)

GENERAL WAGE CHANGES IN PACIFIC - ROCKY MOUNTAIN REGION

NOTE: This tabulation only reports changes. Information on the large number of contracts renewed without change is unavailable. Therefore the tabulation should not be construed as an indication of the overall trend.

Compiled from various sources by Bureau of Labor Statistics, Wage Analysis Branch
(Where initials of unions are given below: A=A F of L; C=CIO; I=Independent)

	Location	Date	Amount of Increase	Number of Workers	Other economic Benefits
CALIFORNIA					
Lumber and Furniture					
Lumber Mills (Santa Clara Co.)		5/1/49	6¼ cents	CJA—A—250	Add. vaca. benefits, 4 paid holidays
Metal Working					
Southwest Rolling Mills	Maywood	6/6/49	14 cents	USA—C	
American Can Co.	Los Angeles	6/49	2½ cents	USA—C	
Refrig. Eng. Co.	Los Angeles	6/20	7c	IAM—I—15	
Basalt Rock Co.	Napa	6/20	10-15c	IUOE—A—20	Add. 6 paid holidays Increase retro. 1/1/49
Peerless Pump Div., Food Machinery	Fresno	6/20	8c	IAM—I 19 machinists	
COLORADO					
Food Processing					
Colorado Cond. Milk Co.	Ft. Tufton	6/49	5c	TCWH—A—60	Retro. 5/20/49; imp. overtime; guarantee 46 hr. work week
Merchant Biscuit Co.	Denver	6/19	5c	TCWH—A—40	
MONTANA					
Metal Working					
7 Sheet Metal Contractors	Billings	7/18	12½c	SMW—A—35	
Wholesale Trade					
Safeway, Inc. Silver Bow Emp. Council	Butte	7/19	None	TCWH—A 45 drivers	6 paid holidays Double time if worked
Transportation					
11 Transfer & Storage Cos.	Billings	7/2	7½c	TCWH—A 75 workers	
Northern Pacific Transport Co.	Billings	7/26	(1) 88c day (2) 76c day	TCWH—A 100 drivers	(1) Bus drivers (2) Truck & trailer drivers
OREGON					
Chemicals & Allied Products					
Mt. Hood Soap Co.	Portland	7/29	13c	ICW—A	6 paid holidays
McKesson & Robbins, Inc.	Portland	7/27	7½c	OEIU—A—41	
Food Procession					
23 Oregon Beer Dist.	Portland	7/1	60c day	TCWH—A 121 drivers	
Ardon Farms Co.	State of Oregon	7/1	12½c hour	TCWH—A—150	
Ice & Coal Storage Cos.	Portland	7/27	7½c	80	
UTAH					
Food Processing					
Calif. Packing Corp.	Spanish Fork	6/16	*(1) 1-1½c (2) 2½c	IAM—I—45	*(1) Seasonal (2) regular workers. Empl; retro. 4/1/49; and 2 add. paid holidays
Utah Ice & Storage Co.	Salt Lake	7/21	*2½c	UPWA—C—90	*Retro. to 7/15/49
Continental, Fisher, Holsum and Royal Wholesale Bakeries	Salt Lake	6/17	*	TCWH—A 75 drivers	*Inc. in min. guar. $2.50 wk. 1st year. Additional $2.50 wk. 2nd year
WASHINGTON					
Food Processing					
Master Bakeries of Washington	Yakima	7/18	*$2.50 week	BCW—A—78	
Pacific Northwest Assn. of Cold Storage Whsemen.	Seattle	7/1/49	*3c	TCWH—A—60	*Retro. 4/1/49
Seattle Milk Dealers Assn.	Seattle	7/12	11½c	IUCE—A—35	
Metal Working					
NW Metal Products Co.	Kent	7/49	*(1) 5c (2) $10 month	USA—C	*(1) hourly workers; (2) Office. 6 pd. hols.
WYOMING					
Transportation					
Motor Bus Co.	Cheyenne	7/25	*12c	SERMCE—A 28 drivers	*Retro. 5/16/49

LABOR—
LAKE TAHOE CONFERENCE

(Continued from page 54)

lish Church Equity Court sense, where it meant to protect the weak against the strong.) Instead of a Trustee to see that equity so is given to the poor and the weak, our new Trustee, the result of the Wagner Act, is a labor leader. He is the one who benefited most by the Wagner Act; his is the lonely voice which so loudly assails the Taft-Hartley law's provisions and who cries to have it repealed. The opposition, by any study made of mail received by Congressmen, shows the rank and file do not oppose the act, but the leaders do.

Basic Law

Our basic law came from the old English Church Equity courts. Our government is not a democracy—the founding fathers knew that form could not work. Then 98 per cent of the people were Christians, 80 per cent lived and worked on the soil. They, independent people, picked their best men to represent them in government. Today, politicians believe that close to 50 per cent of the voters take instructions from outsiders whom they do not know. As an example, the CIO in three days of national convention told the Congress everything it was to do, in this session, from foreign policy to all domestic affairs.

20 Years' Progress

We have moved rapidly during the past 20 years into the beginnings of a "welfare" state. Our republic has become a "democracy." The demos claim the Constitution says we must have a state devoted to the welfare of the people. Just that. What they have given us is extraordinary pressure groups. As a result we now have purely a political expediency government.

Behind that government is a lot of groups, including 250,000 trained CIO precinct workers in metropolitan areas alone. These pressure groups would have fullycontrolled this country's legislation in this present Congress but for the combination of Democrats and Republicans, known as the Demo-Gops. We must change all this. First we must elect honest men to our various legislatures. Second we must back them up.

Fulton Lewis, Jr.:

There is no longer a Democratic party. It is the regime in power that counts. Yet there is a great deal people like yourselves can do at the grass roots, to bring back responsibility in government.

Business and industry can mobilize down at the grass roots. Your young Congressman (meaning Mr. Werdel) whipped Jerry Voorhies, the fair-haired boy of the White House, the Communists and P.A.C. You can do likewise in almost any territory if you will only work at it.

Last election the Trumanites won California by some 20,000 votes. There were more than 2,500,000 people eligible to vote who did not register, and only 60 per cent of those registered voted. In my own case, of six best friends four had not registered. This is our neglect.

What You Can Do

Here is what you can do personally. Let each person in this group get two other people to register, who are not registered now. You'll find plenty of them among your friends. Get each of them to promise to get two more to do the same thing. This process, if carried out five times by all those upon whom the request is made, would bring enough non-voters to the polls to vote next election to wipe out the 20,000 deficit last year by which the present administration carried California.

Need New Thinking

As a Democrat Mr. Lewis criticized the Republican leadership, but said they needed new thinking, new philosophy, and a willingness for those on top to sacrifice their own notions and let those in the party who can come out and fight on an American program do so. The party must either do this or accept the welfare state, he believes, and 1950 is the crucial year.

Congressman Richard M. Nixon, California:

On the Communistic activity of the Un-American Activities Committee of the House, Richard M. Nixon, Committee member and member of Congress from the 12th District of California, told of the handicaps faced by his committee in getting at Communists and fellow travelers in the government, due to the interference of government officials. These, he said, were fearful that some of the cases, if convictions occurred, would greatly embarrass the administration.

Repeating in essence what the other two Congressmen had stated previously, he said:

The Fight Is On

"In 1950, unless we win a substantial number of seats in the House, we can accept the labor state. We must fight at all levels. We have a chance and it may be our last. . . . We must give the people the facts and let them decide."

J. Copeland Gray, employer representative of the National Labor Relations Board:

"The Board is short of examiners, has a larger backlog than when it assumed the job and this is expected to grow worse."

Good Labor and Public Relations

The California Metal Trades Association calls attention to a recent article in the NAM Exchange.

Before a recent lay-off, the company first explained the economic reasons to all its employees. Then it set out to help laid-off workers find other jobs. Classified ads were placed in the plant community newspaper and in the daily newspapers of three nearby towns. Copy for the ads ran:

HELP AVAILABLE

We have had to lay off some of our employees. We'd like to help them find jobs. If you need help, we have a list of people who want employment. Call in person or write

INDUSTRIAL RELATIONS DEPT.
A. B. Chance Company

The company involved is the A. B. Chance Company of Centralia, Mo.

The results were surprising. Telephone calls and letters from many sources offered employment for the laid-off workers. Newspapers editorialized on this "human relations revolution." But, best of all was the good phychological effect on employees, their families, and the community.

As the writer of the article pointed out, even when it becomes necessary for an industry to lay off workers, the situation, if properly handled, can be turned to public relations advantage.

CIO Discredits "Conference for Peace"

From the north comes word that Karley Larsen, president of the northern Washington district No. 2, International Woodworkers of America (CIO) has been rebuked and discredited by his international officers, because of his activity in sponsoring the "National Labor Conference for Peace," at Chicago last month, as temporary chairman of the Northwest committee of the Conference. The international office of the woodworkers' union notified all concerned that Larsen was on his own and not representing the union.

The Labor Herald (CIO), Los Angeles, gives the names of the following as among the sponsors of the NLCP:

John Allard, president UAW Chrysler, local 230; William Axelrod, News Venders executive secretary; Chet Baker, Marine Cooks patrolman; James L. Daugherty, California CIO Council president; Frank Hern, ILWU Warehousemen's local 26 business agent; Lew Seeliger and Lou Sherman, officials of local 26; Dennis Hooper, Marine Cooks port agent; George Broadhead, Mine, Mill & Smelter local 50; Bill Chester, Longshoremen's local 10, ILWU; Bruce Risley, American Communications Assn., local 9; Paul Chown, Alameda County CIO Council; Celia Wilby, Office & Professional local 34; Gwen Kircher, ILWU Scalers local 2, and Ed Barlow, San Francisco CIO Council.

Wage Changes

FOR the past three months the fact has been told in this department of *Western Industry* that the metal working industries, one of the larger groups in our country's economy, in the main has been renewing contracts with organized labor without increasing wages, but in many cases with some other benefit, like added holidays, a lump bonus, night shift differential and so on. For the month of August the Bureau of Labor Statistics, U. S. Department of Labor, in its report on Current Wage Developments finds the trend continuing:

"... The wage situation in the metal working field remains largely unchanged," the Bureau reported in late September. "No agreement affecting more than 4,000 workers was announced during recent weeks. Of the 150 smaller settlements (200 to 4,000 workers) listed in this report, 41 provided wage increases, generally 5 cents per hour or less, and about half of these agreements also provided for supplementary benefits." The remaining settlements (109) "called for no wage adjustment, although many provided additional benefits. However, in at least 60 cases the issue of a wage adjustment can be raised this year."

"An exception," the Bureau stated, was the Southern California aircraft industry which produced two major settlements in late August. At the Lockheed Aircraft Corp. plant in Burbank, approximately 15,000 workers, mostly IAM-I, were given an increase of 5 cents per hour. Two cents additional was set aside for supplementary benefits to be worked out. A fund of $500,000 was set up for the correction of job classifications. An additional 5 cents per hour was allowed to increase upper limits of job rate ranges, to be used for merit increases.

Douglas Aircraft Co., followed with 5 cents an hour general increase, 5 days of paid sick leave for employees with 5 years of service, a 2-cent increase in shift differentials and an increase in reporting pay. This settlement covered some 9,000 employees in El Segundo and Santa Monica.

No settlements at the end of August had been reached at the Long Beach plant of Douglas and at North American Aviation plants, under jurisdiction of UAW-CIO, although negotiations were current.

General Motors and the UAW-CIO and UEW-CIO announced August 26 an agreement to modify the quarterly adjustment of the cost of living allowance by adding 0.8 point to the BLS consumers' price index on which the allowance is based. This was done to adjust the Bureau in its rent index.

Construction

Somewhere in the neighborhood of 100,000 construction workers received wage increases in July and August, a decrease from the high numbers reported during the spring and early summer. Down south some contracts were closed without wage changes..

Food

Thousands of food workers, such as flour mill, distillery, meat packers, and bakers' employees in various parts of the country got from 5 to 10 cents per hour. This also, is a slackening off from the previous months when many more instances of wage increases in the food industry were reported.

Lumber

Some 7,000 AFL workers in Southern California lumber yards, planing mills, sash and door plants, and handling docks voted to accept an increase of 5 cents an hour effective January 1, 1950, in preference to a 2½ cent increase retroactive to July 1, 1949.

A two-month strike of 15,000 workers ended early in August when the Tri-State Lumbermen's Association, representing suppliers of mine timber in Pennsylvania, West Virginia, and Maryland, agreed to restore a wage cut put into effect on June 6, 1949.

Petroleum

A new company-wide contract between the Sinclair Oil Corp. and the Oil Workers International Union (CIO), covering 10,000 workers has been negotiated. No general wage change is provided; adjustment of wages may be opened during the year. A two-weeks vacation period is provided (it was one week) after one year of service; and added pay for sick leave for longer service.

Paper

Like the metal industries, paper and allied products have shown a varied wage situation over recent months. Of the 74 agreements reported, 17 provided general wage increases, none of which exceeded 5 cents per hour. Over 60,000 workers were involved in the 74 settlements.

Western Retail Trade

Negotiations provided about 8,000 grocery clerks, (AFL) in Los Angeles with $2.50 wage increase effective September 5 and an additional $2.00 next January 1. An arbitration award gave a $5 weekly increase to similar workers in seven central California counties.

Real Results of Warehouse Strike

When the 110-day warehousemen's strike ended on Sunday, October 2, one of the officers of Local 6, ILWU, (CIO) was quoted in the press as saying the result was the greatest win for the union and the greatest loss for the employers since the Distributors Association of Northern California was organized in 1938.

Winning or losing depends on what you are playing for. The union's wage demands were so extreme, in comparison with settlements made by employers' associations in the Bay area, Portland, and Seattle with other warehousemen that no one could take them seriously. As the strike progressed, observers were convinced the union leadership wanted arbitration now and hereafter; also the boys on top wanted a long-time contract.

Knowing something of the practices of this group of leaders in connection with arbitration, and knowing the respect the NLRB has for both arbitration awards and long-time contracts, the conclusion was arrived at that the warehousemen were out to gain a certain position where they might not be subject to raiding by some other union in the future.

In the settlement, the union got neither of these demands. The employers agreed to arbitration of disputes over the meaning of the terms of the contract, which is a normal and usually harmless procedure.

But what of the 6,000 members of the union who lost 77 working days, at $9.60 per day for women, and $11.00 per day for men; $1.20 per hour for the women and $1.375 for the men? They got 10 cents per hour raise in the settlement.

Each woman lost in wages $9.60 x 77 or $739.20.

Each man lost in wages $11.00 x 77 or $770.00

The women will need to work, at the additional 10 cents per hour, to break even with their finances of June 16, 1949 when the strike started, 7392 hours, or more than three years of 2,000 hours each.

The men, to make the same goal, will need to work 7700 hours or nearly four years of 2,000 hours.

The union lost its objectives, the employees lost a lot of money, and the employers won on their principles, which were very important to them and to other employers.

REGIONAL REVIEWS
Tehachapi to Tijuana

Roar of Military Activity Down To a Whisper after Budget Cuts

Army and Navy Bases close, throwing many persons out of work; Citrus farmers plagued by labor shortage; L.A. T.V. sprouts network.

LOS ANGELES. — It's always the foot with the sore corns that gets stepped on, local business men reflected ruefully as news of the sweeping cuts in military budgets trickled back from Washington.

The dismal figures contained more bad news for some of the communities that already had undergone the most drastic readjustments since the war's end. Among them was the Long Beach-Los Angeles Harbor area, which long ago saw most of its bustling shipbuilding and aircraft activities melt away and its teeming military centers shrink to mere skeletons.

Civic leaders had been aroused earlier by fears that sinking of the land underlying the big Terminal Island Navy yard would lead to closing of the installation, its huge dry dock already imperilled by buffeting tides. While the wires to Washington still hummed with protests, the budget decision was announced. More than 5000 employees will be dropped during the next few months, leaving only a small maintenance force on guard. Bulkheads will be built at a cost of $4,500,000 to protect the docks and piers and keep the sea from flooding the area completely.

More Cuts

Closed, too, will be the El Toro Marine base at Santa Ana, whose overhaul and repair depot for aircraft was reactivated only last year. About 1000 employees will be discharged here, and another 1000 at San Bernardino, whose Army Air Force base will have its warehousing and parts distribution activities chopped. Substantial cuts will hit San Diego naval installations, the Seal Beach ammunition and net depot, the Port Hueneme naval base, the Barstow Marine Corps depot, and the Fallbrook naval ammunition depot.

Shift of Program

At Long Beach, civic leaders abandoned their campaign to save Terminal Island. In cooperation with the San Diego Chamber and the Navy, they launched a job-finding program for displaced workers, setting up lists of skills available and circulating them to prospective employers. The Navy compiled a job qualification report on each worker, showing both his Navy record and his general background of experience. The Los Angeles Chamber cooperated in a campaign addressed to Eastern manufacturers known to be thinking of establishing branch plants in the West, directing their attention to this pool of trained manpower.

Although layoffs at the Terminal Island yard will be at the rate of only about 700 a month, voluntary quits are speeding up the process. The community is watching with considerable interest to see how many of those released will return to former homes in the East. Of the employees at the El Toro base, many of whom live in Long Beach and commute to work, nearly half are home-owners and probably will remain here.

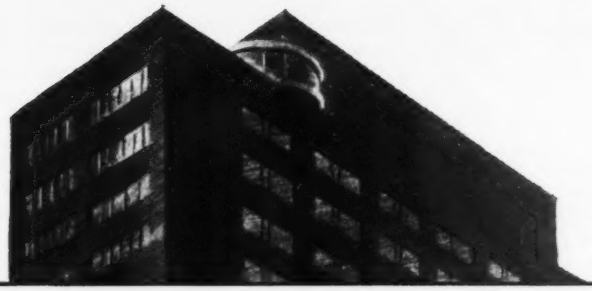
Offsetting these cutbacks to some extent will be new activities by the Atomic Energy Commission, whose West Coast budget for 1949 is $98,000,000 and in 1950 will be $112,500,000. In due course, at least $471,500,000 will be spent on the West Coast for construction of proposed atomic energy installations. In southern California, a $3,500,000 base at the Salton Sea is now 95 per cent completed. Other local units are the atomic energy project for medical research at the University of California here, and the Los Angeles procurement office, which currently is placing contracts for supplies amounting to about $1,000,000 a month.

Seeking to promote further subcontracting of work by local shops, the U. S. Department of Commerce's field office here now is maintaining a prospect list of companies receiving prime contracts. Nearly 200 manufacturers already asked to be placed on the mailing list for the monthly listing of new "prospects." The office now has a loose-leaf manual which in effect is both a master list of Government contracts on which bids are wanted, and a guide to potential subcontract work. Heretofore it has been difficult for the business man to keep track of the many Federal agencies that are in the market for almost every kind of supplies. With so many prime contracts being let in this area, smaller shops have a large field for their specialized talents.

Industrial Indigestion

A slight attack of indigestion recently hit at San Diego's industrial community, which chewed off an oversize bite in attempting to assimilate the huge plant additions built there during the war. The company which bought ten of the government surplus buildings at Consolidated Vultee's Plant No. 2 has been facing foreclosure by the War Assets Administration for failure to meet payments due. About 60 per cent of the floor space had been sublet to various local businesses, but revenues

(Continued on page 60)



Terrace Plaza Hotel, Cincinnati, Ohio, in which some 135,000 pounds of Revere Copper Water Tube were installed.

IN BUILDINGS LARGE OR SMALL REVERE PRODUCTS INSURE QUALITY

Copper Flashing, Water Tube and Downspouts were used in this Revere Quality House at Parma Heights (Cleveland) Ohio.

TROUBLE always costs more than Revere Copper. That's why—in every type of building—it pays to let *lasting* Revere Copper guard those vital points where water will cause other materials to rust, rot or corrode.

ROOFING, GUTTERS, FLASHING. Copper is the most enduring of all the commonly used sheet metals when exposed to the elements. In addition, the Revere Research Laboratories have developed engineered specifications that help you combine quality and economy in every type of sheet metal construction. This data is in the files of most of the leading architectural offices.

PIPING. Used as piping for heating systems, water supply and waste lines, Revere Copper Water Tube provides a lifetime of trouble-free service. The interiors of this tube do not become clogged by corrosion; and remaining permanently smooth, they reduce frictional resistance to a minimum. In addition, because Revere Copper Water Tube bends readily, and joints are made quickly with solder fittings, this tube is easier to install.

ORNAMENTAL AND STRUCTURAL METALS. You can achieve unusual decorative effects—combined with sound, lasting construction—through the use of Revere panel sheets and extruded shapes. Revere panel sheets are made in architectural bronze, nickel silver and copper; extruded shapes in architectural bronze, nickel silver and aluminum.

The products above and other Revere products of copper, brass and bronze are available from leading distributors throughout the United States. A Revere Technical Advisor will always be glad to consult with you, without obligation.

REVERE

COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

230 Park Avenue, New York 17, New York

• • •

Mills: Baltimore, Md.; Chicago, Ill.; Detroit, Mich.; New Bedford, Mass.; Rome, N.Y.—Sales Offices in Principal Cities, Distributors Everywhere. Pacific Coast District Sales Offices in San Francisco, Seattle, Los Angeles.

(Continued from page 58)

weren't enough to carry payments and taxes.

Just as the sheriff was about to nail up his notice on the door, the enterprising operators put through a quarter-million-dollar deal, selling one of the ten buildings to Bekin Van & Storage Company, which in turn is leasing it to another storage firm. Proceeds will permit refinancing of the entire project and put it back on a solvent basis, to the vast relief of civic-minded industrialists.

Also adopted recently into the industrial community is a portion of Camp Anza, huge war-time staging center near the orange-belt city of Riverside. A 23-acre portion of the camp, with 63,000 square feet of building, has been purchased by the W. Atlee Burpee Company, which will establish its Western headquarters here, employing several hundred in the seasonal work of packaging seeds and shipping them to a world-wide mail order trade.

Citrus Labor Shortage

The Orange belt was plagued this summer with a labor shortage, due largely to the immigration service's drive against "wetbacks." These, in local parlance, are Mexican nationals who have entered this country illegally, supposedly by swimming across the Rio Grande, hence the name. There were protests from citrus ranchers, who knew they soon would be needing 15,000 men in the groves and who knew, too, that every time one wetback is arrested, ten additional aliens leave their ladders and lie low for the time being. But immigration officials point to the Federal law, and to the fact that the international agreement under which 10,000 Mexican contract laborers previously were admitted to this country has expired and has not been renewed. Men from the unemployment rolls, contend the ranchers, are inexperienced and undependable.

One Solution

Now another solution has been found—displaced persons from Estonia and Latvia, brought here cooperatively by a citrus growers' group, the Lutheran Church, and the International Refugee Organization. Most of them are farmers and are grateful for the opportunity to learn American ways. They are guaranteed a minimum wage of 65 cents an hour and soon can earn considerably more by piecework rates. In their spare time they study English and get a start toward eventual U. S. citizenship.

More Cars

The local automobile industry is displaying further signs of lusty growth. Studebaker has gone on a six-day week to meet an unexpectedly large influx of orders for its new 1950 model. Weekly output will be jumped from 608 cars to 960. The Los Angeles plant serves the eleven Western states. Electric Auto-Lites' second auto battery plant on the West coast is now getting into operation here with a production schedule calling for 3000 batteries a day. It's the company's largest plant west of Chicago. Meanwhile, Ford's Western procurement program brings California its first volume production of auto radiators. Modine Manufacturing Company of Racine, Wisconsin, having started work on a new plant at Whittier to handle an initial output expected to average $3,000,000 annually.

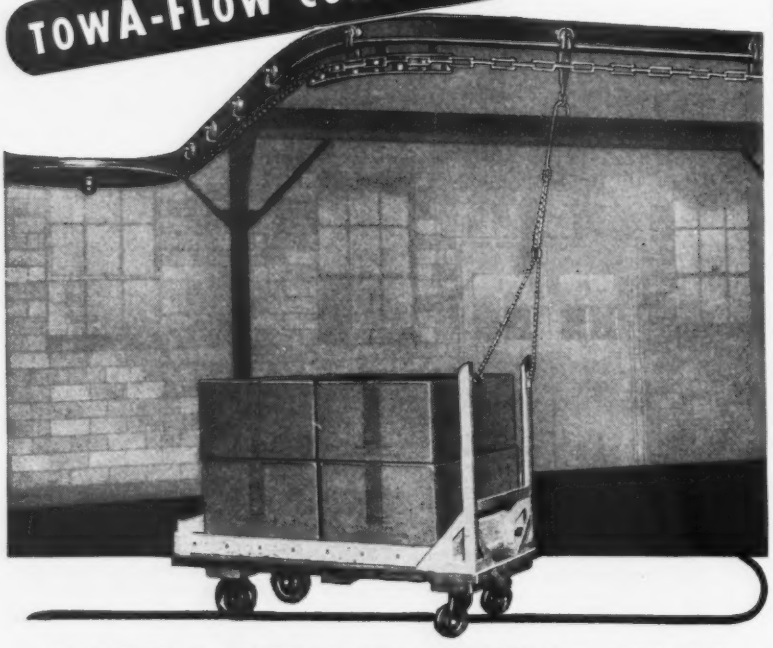
Business Preview

Bethlehem Pacific recently gave newsmen a preview of the new facilities which in 1950 should enable the 55-acre Los Angeles plant to triple its wartime steel-making capacity. Foundations are down for a new ingot stripping building and a 75-ton electric furnace which will permit delivery of 350,000 tons of ingots annually. Late this fall, new bolt and nut making machinery, now on order, will go into place, along with the area's first modern wire mill.

The visiting newsmen also took a look at the just-completed 50-ton electric furnace, largest on the West coast,

ALVEY-FERGUSON Engineered

TOWA-FLOW CONVEYOR



MODERN, FLEXIBLE TRUCK TOWING SYSTEM!

Saves Time . . . Eliminates Costly Truck Pushing

Here's an idea! With the A-F TowA-Flow you can easily adapt your hand truck operation to this modern, efficient conveying system. Clear your aisleways, save valuable time and relieve your employees from costly truck pushing. No alteration or damage to plant floors—the convenient, easy-to-maintain TowA-Flow is overhead. Trucks are easily and quickly attached without stooping.

The A-F TowA-Flow System, like all A-F Engineered Completely Co-ordinated Conveying Systems, represents 48 years of know-how. Whether your plant can operate more efficiently with an A-F Gravity Roller, Power Roller, Belt or Pallet Conveyor, these 48 years of know-how will point the way to greater efficiency and savings. Why be satisfied with less? . . . Write for a discussion—today.

THE ALVEY-FERGUSON COMPANY

117 West 9th Street, Dept. W.I. • Los Angeles 15, California

Main Office: Cincinnati 9, Ohio — Established 1901

as well as the new soaking pits for heating steel ingots, the new blooming mill, and a ten-inch high-speed bar and rod mill producing both bars and coiled rod.

T.V. Thrives

Hollywood's determined efforts to become the nation's number one television center got another boost when, amid much horn-blowing, its first "network" TV program went on the air—and onto celluloid. Telecast from CBS's new outlet, KTTV, it was the first of a weekly comedy review series starring Ed Wynn, and was "canned" for simultaneous air shipment to 15 CBS stations in other TV cities.

The latter term is meaningful in the fast-developing video field, for television has yet a long way to go before facilities are in operation in the majority of population centers on the U. S. map. But the Los Angeles Chamber of Commerce's newly formed television committee is pointing with unusual pride to the rate of TV's growth here, gleefully offering statistics to show that record-breaking sales of receivers here this fall must have enabled their city to nose out Chicago for third place nationally.

"As of July 13," trumpeted the committee, "Chicago had only 1016 more receivers than the Los Angeles area. Southland sales have been steadily increasing, while Chicago's have been declining—to about half the Los Angeles volume in July.

"Unless Chicago has a sales miracle in August, Los Angeles should now be in third place as a television market."

Testifying to the rapid growth is Packard-Bell's announcement that it is investing a quarter of a million dollars in a new building on a three-acre tract to expand its output of TV receivers and automatic home recorders. Special plant features will be a self-contained broadcast station for testing TV sets, and vibration-islands for placement of heavy punch presses.

Standard Oil Gets Blue Ribbon

A series of advertisements which appeared in Western Industry has won for Standard Oil Company of California, second prize in a national selection made by the Industrial Advertisers Association.

This series of ads, entitled "The Standard Engineer's Case File" and "The Standard Engineer's Reports" appeared in 44 publications in 13 industrial fields, both regional and national. Copy was closely tailored to the field addressed.

JUNIOR LONG DISTANCE CONVEYOR INSTALLATION

At the Irwindale, California, plant of Consolidated Rock Products Co., a nearly half-mile long conveyor has been transporting granite rock and sand deposits on regular service since April 12, 1948.

Operating through several tunnels under the highway and railroad tracks, the 4717 foot belt moves at 550 feet per minute. Center-to-center distance is 2264 feet, and the rise is 50 feet. This system has a capacity of 1000 tons per hour, and is driven by a 200 horsepower motor at 1765 r.p.m.

Thirty-six inches wide, this six-ply belt is of the Cord Conveyor type. In this construction, belt cords run parallel to each other throughout the entire belt, giving greatly increased resistance to impact.

Cord diameter used in the belt, with other features of construction, make it capable of transmitting a stress of 70 pounds per inch for each of its six plies. This has increased troughability, permitting use of smaller pulleys at both ends of the drive, and brought initial construction economies by reducing structural weight as well as reducing operating costs.

• Looking down conveyor from head.

• This nearly half-mile long stacker conveyor has a capacity of 1,000 tons per hour of sand or gravel. Old pit equipment can be seen in the background.

Studies Isoptopes

Dr. C. O. Reiser, head of the chemical engineering department, University of Idaho, attended the June term of the Radioisotope Techniques School at Oak Ridge, Tennessee. The University expects to send several members of its staff to this training course in order that its scientists may utilize the radio-active elements in their research and investigations.

Hard Hats Needed

Sixteen fatal accidents and 260 head injuries in California industry last year, all of which might have been averted by the use of safety hats, are reported by the California Safety News. In all, 45 deaths and almost 6,000 disabling injuries resulted from failure to use suitable clothing and adequate personal protective equipment.

Geneva Rate Case Decision Does Not End There; Questions Arise

Western steel fabricators hope to get rates which will allow them to compete with eastern firms; San Francisco's "strikeless strike" ends.

SAN FRANCISCO—The big freight question, now that the Geneva rate case has been finally decided by the Interstate Commerce Commission, is "What comes next?" Will it set off a chain reaction, or merely result in a few adjustments? By the time this appears in print, the facts may be known.

The so-called Geneva rate was instituted in wartime by the Rio Grande and the Western Pacific, to apply on government steel plate shipments from the then government-owned mill at Geneva to the shipyards in Coast cities, and was continued by these two roads into the postwar period. It started at 48c per cwt., but with subsequent advances in rate levels it is now 63c, as compared with the 91c charged by the Southern Pacific, Santa Fe and Union Pacific, who failed to follow along the Rio Grande-Western Pacific path.

• Another 40 feet of Basalt-Kaiser steel pipe is pressed into shape at the Napa, Calif. plant of Basalt Rock Co. Pipe must be welded before undergoing high-pressure tests.

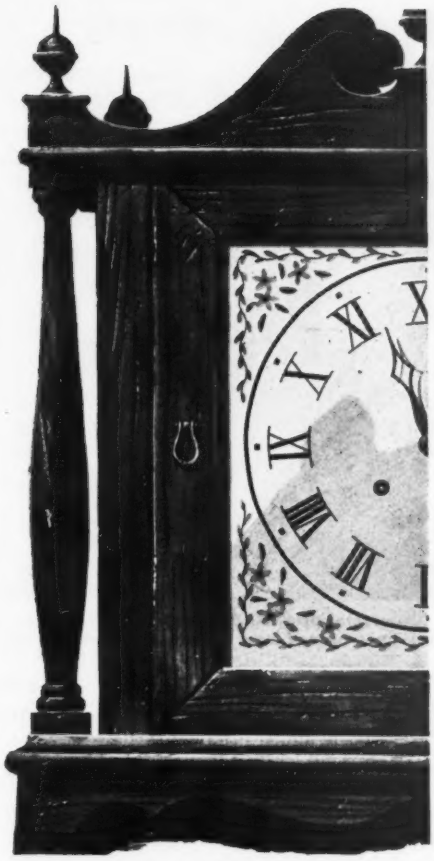
Steel users on the Coast, through the steel committee of the Western States Council, championed the rate reduction as essential if Coast fabricators were to compete successfully against Eastern competitors. They were successful in having U. S. Steel Corporation agree to make it part of their program if they were the successful bidders when the government sold the Geneva mill to private industry.

Other steel companies opposed, however. The Kaiser people contended that it put them at a disadvantage, both in shipping coal and iron ore from Utah to the Kaiser mill at Fontana, near Los Angeles, and in reaching Utah, Idaho, the Pacific Northwest and other areas with finished products from Fontana. Midwestern mills held that it practically shut them out of the Coast market.

At this writing it was evident that the other railroads are very likely to give Kaiser relief in the very near future, by adjusting their rates to enable Kaiser to reach other Coast points on a more competitive basis, and also perhaps give him relief on coal and ore. But beyond that lies a land of uncertainty, on which the Kaiser people hope will shine the sun of lower rates, but others are not so sanguine about.

Bethlehem Pacific Coast Steel Corporation may get the benefit of rates which will enable them to reach the Pacific Northwest with light structurals from the South San Francisco mill. While the parent company also opposed the Geneva rate, nevertheless its Sparrows' Point probably will continue to get its share of Coast business, particularly since it is the only mill equipped to turn out wide angle beams.

(Continued on page 64)



How time has changed...for the West!

Because of Kaiser Steel's West Coast location, delivery time to manufacturers is cut by as much as *one half*.

Which means, for Western manufacturers, a lower investment in inventory and warehousing, as well as less handling.

That acts as a powerful incentive for small business to get started, for large business to expand.

Another reason why the West's only integrated *independent* steel plant is bringing more industry, more jobs, more wealth to the West!

It's good business to do business with

Kaiser Steel

built to serve the West

PROMPT, DEPENDABLE DELIVERY AT COMPETITIVE PRICES • plates • continuous weld pipe • electric weld pipe • hot rolled strip hot rolled sheet • alloy bars • carbon bars • structural shapes • cold rolled strip • cold rolled sheet • special bar sections • semi-finished steels pig iron • coke oven by-products • For details and specifications, write: **KAISER STEEL CORPORATION, LOS ANGELES, OAKLAND, SEATTLE**

S. F. REVIEW—*(Cont. from page 62)*

Colorado Fuel & Iron, another protestant, may demand a better deal on reaching Midwest territory out of its Pueblo mill. While the various railroads are the only factors of record in the case, it is understood that truck competition had an important influence in holding the steel rate down. Geneva officials investigated truck possibilities several weeks ago, and some steel has moved by truck to the Coast.

Santa Fe Benefits

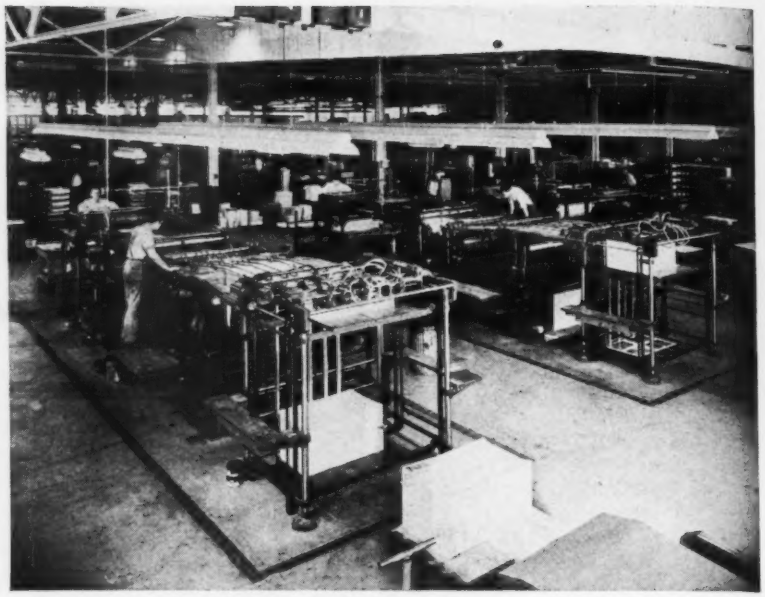
Speaking of trucks, the Santa Fe has been granted important privileges by the California Public Utilities Commission which will enable the road to handle many of its lcl shipments within the state on a much more efficient and economical basis. The Commission recently allowed Santa Fe to substitute trucks for rail cars on lcl shipments between points on the railroad, but only at rail rates. Thus the Santa Fe is not allowed to meet the lower trucking rates, but at least gets the benefit of saving the expense and time involved in setting off cars at points which only take a small amount of freight. Santa Fe has had this service around Fresno for some time, but now can do it on a state-wide basis. This will not involve purchase of additional automotive equipment, as the Santa Fe has plenty of trucks and trailers available in the Midwest, and also owns outright a truck line in Southern California.

Strikeless Strike

Although the warehouse strike was officially concluded at the end of September, it has been virtually a "strikeless strike" for a long time, because shippers found their way around the union barriers by hauling merchandise into the San Francisco Bay area from Sacramento, Stockton, Modesto and other points. A more expensive proposition, but it worked to a large extent.

One outcome of the warehouse strike and the dock strikes in Hawaii is that the San Francisco Chamber of Commerce, which has stayed out of the labor relations field entirely in recent years, leaving the work entirely to the San Francisco Employers Council, is now about to appoint a labor relations committee and endeavor to take an active part from now on.

It is often said that these strikes are turning business away from the Bay area, but the influx of new plants seems to indicate that the Westward movement of business is too strong, although the area might well have grown still faster without the strike conditions.



• Commercial printing department of H. S. Crocker Co.'s San Bruno, Calif., plant. Black lines around base of presses mark the individual foundation of each press.

Why Does Glass Stick to Metal

Why two dissimilar materials as glass and metal should adhere is a most important phenomena. The porcelain enamel and electronic industries are dependent upon it.

At least three schools of thought are advanced for the reason. They are: (1) theories presented in the literature of porcelain enameling; (2) theories by the glass-to-metal seal technologists; (3) a suggested theory presented by Joseph A. Pask, associate professor of ceramic engineering, U. of C.

School of thought (1) has three theories: First is that a thin layer of metal between glass and metal base acts as a bond layer. Second considers that an oxide layer between the glass and base acts as a bond, or a solution bond. Third offers that a mechanical bond is exemplified by the glass gripping to a rough surface.

School of thought (2) thinks that the oxide is said to be the bond.

Pask's suggested theory is threefold: First, oxygen, either absorbed or as a definite oxide layer, is necessary for the glass to wet the metal. Adherence, even without any definite visible or measurable oxidation is thus obtained, although it is very poor. Second, in order to improve adherence the metal has to be roughened in some way to develop a mechanical gripping. And third, if a definite oxide layer is present the glass must have a high enough solubility for the oxide and a definite penetrability in order to come in contact with the roughened metal.

Certified Zinc Alloy Plan Assures Guaranteed Quality

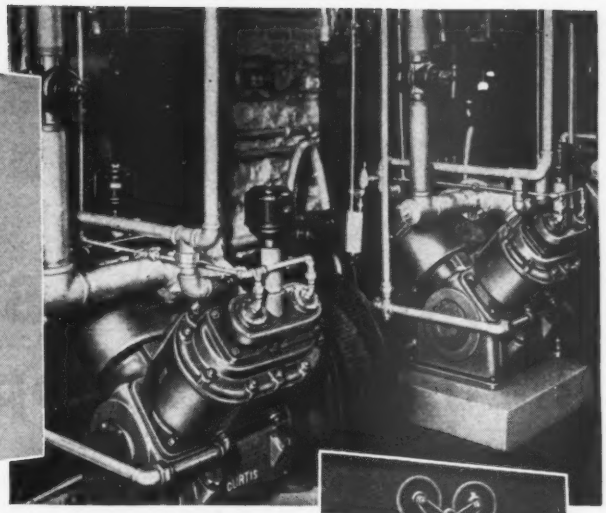
Certified Zinc Alloy Plan, a new project of the American Die Casting Institute, will be of interest to all buyers and ultimate users of zinc die castings.

According to J. M. Davis, president of the Pacific Coast group of the American Die Casting Institute, all manufacturers subscribing to this plan may now identify their zinc die castings with a certification seal which has been adopted by the institute. This seal becomes a mark of quality identifying member producers. American Die Casting Institute has worked out with a majority of its members a comprehensive plan that will permit the public to easily identify castings produced under an alloy quality control that assures chemical constituent limits, resulting in the best physical characteristic.

Definite and proper composition limits for zinc die casting alloys have long been established by the American Society for Testing Materials; the new Certified Zinc Alloy Plan insures that every zinc die casting bearing the certification seal will be produced from metal conforming to these limits. This is accomplished by frequent sampling of castings from all participation die casting producers, for analysis by an approved laboratory.

A die casting producer can use the certification seal on his castings and in his advertising only when the sampling and analysis indicate that he is continuously conforming to the alloy standards set down by ASTM.

Reduce Production Costs with CURTIS AIR COMPRESSORS, AIR HOISTS AND AIR CYLINDERS



Plant after plant is turning to Curtis Air Hoists and Cylinders for pushing, pulling, lowering or lifting operations . . . and to multiple installations of Curtis Air Compressors, which eliminate long air lines, the possibility of air leaks, and losses resulting from breakdowns of central air compressor installations.

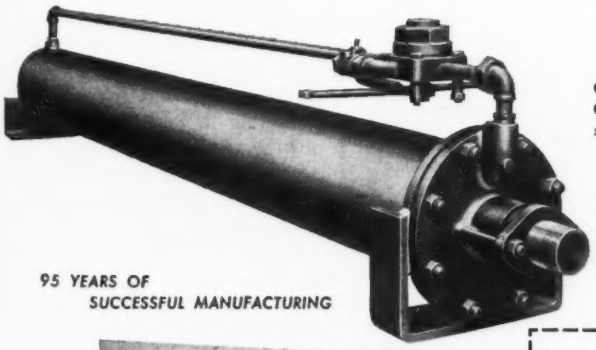
Here's why it will pay you to consider CURTIS *equipment*

AIR HOISTS AND AIR CYLINDERS

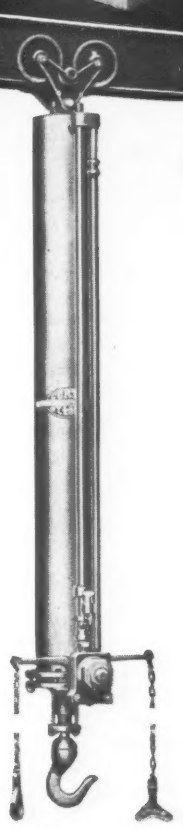
- Cannot be overloaded.
- Hoisting or lowering speed is controlled by operator.
- Ground-steel cylinder.
- Disc type valves.
- Valve automatically returns to vertical position when released.
- Can be operated by unskilled labor.

AIR COMPRESSORS

- Timken-Bearing equipped—permits external adjustment.
- Self oiling—positive lubrication.
- Precision construction throughout.
- Complete valve assembly removed or replaced in a few moments.
- Cylinder, crankcase, also heads made from gas-tight iron.
- Fully enclosed.



Curtis bracketed-type Air-Hoist Cylinder can be placed in any position from horizontal to vertical.



Curtis Pendant Air Hoist can be used for practically any lifting problem where the head room is not limited.

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Curtis Pneumatic Machinery Division of Curtis Mfg. Co. 149-4
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☐ Air Cylinders
☐ Air Compressors

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REGIONAL REVIEWS
The Columbia Empire

Economists Say Business is Better; Industrialists Hope They're Right

And the optimists go right ahead with major industrial construction; Columbia Basin Project scheduled in the future to 1958.

PORTLAND. — The fall months brought no clearcut picture of the economic situation — except that "things are better" for the Lower Columbia country. Industrial payrolls moved up—exceeded even 1948 for August at $64.4 million — but unemployment compensation totals climbed, too, when fall harvesting failed to take up the usual slack. The latter was in the national trend.

Shine On—

Bright spot has been lumbering, which continued its late summer pickup through September with indications of a good fourth quarter and not too much slack over the holidays before early spring buying. Many unemployment checks, however, have been going to unemployed loggers and lumbermen, victims of small mill shutdowns during the bad break in the Douglas fir market. There were 3,080 such checks in August compared with 692 a year ago in Oregon.

Many of these small mills probably won't go back into business, short of another war boom, it is expected, because marginal mills can't operate even on a firm market without a fairly wide profit margin.

There has been a noticed lack of activity among steel fabricators and allied industries that supply heavy equipment to logging, lumbering and heavy construction. Most buyers are biding their time for assurance that the market isn't going to fall flat on its face again and leave them stranded with large, new capital outlays.

Oregon purchasing agents report early fall collections have been slow in those industries serving logging and lumbering, but logging and lumbering itself is in a very healthy condition.

Another bright spot is construction. Building permits for Portland during September were above a year ago and substantially above August. The first three weeks of September totaled $3,517,000 against $3,201,000 for the full month of August and $3,509,000 for September, 1948.

In the meantime, the federal government is spending $200,000 a day to bring irrigation water to 1,000 new farms in the Columbia Basin by 1952. And work on McNary dam is being pushed. Proceed orders currently have gone to Parker-Schram to construct $417,000 worth of levees in the Richland, Wash., vicinity to care for McNary reservoir waters, and Willamette Iron & Steel has a $369,700 go-ahead for making and installing 11 lower-gate levees for the spillway gates. Maloney Electric of St. Louis is making $857,800 worth of transformers for the McNary power plant.

Columbia Basin

The bureau of reclamation now has scheduled its Columbia Basin project beyond 1952 to include 71,000 new acres in 1953, 77,000 in 1954, and 91,000 in 1955. By 1958 water will be flowing over 536,000 acres of newly irrigated land, enough for 6,700 farms, the bureau figures.

But not all departments of the federal government are currently as well liked as the corps of engineers and bureau of reclamation. Oregon Chamber of Commerce and state-official support has been given Washington State in its battle to prevent the department of the army from moving Boeing's vast plane industry from Seattle to Wichita. Boeing's sub contracts are far-flung in the Pacific Northwest. One of its big subcontractors has been Iron-Fireman's home plant in Portland—now that some of the latter's heavy manufacturing has been moved east to serve Eastern markets without the costly two-way haul for raw materials and finished products.

Signs of the Times

As to the present long-term outlook, there are many optimists in this region. Large private construction projects, led by Nabisco's $6 million Portland bakery nearing completion, are not as numerous as in earlier postwar years, but there is no dearth of $150,000-$200,000 commercial buildings. In recent weeks some $5 million in 6-, 10-, and 12-story apartments have been placed in the hands of contractors in Portland alone.

A sign of the times was found in recent conventions of the two labor unions that dominate the Pacific Northwest lumber industry. The Northwest Council of Lumber & Sawmill Workers, meeting in Portland in mid-September, served notice on employers that it would strike before accepting any lowering of working standards or pay cuts. The International Woodworkers of America, dominant in the woods, went even further at its Vancouver, B. C., convention the end of the month by asking for a 30-hour work week and improved health and welfare programs. It pointed out that workers could supply annual U. S. lumber needs in nine months with an eight-hour day.

But the operators aren't keeping up with orders now (fir and pine had orders exceeding production by 10 million feet in several recent weeks) and are spending good money to keep the orders coming.

What keeps a model kitchen "Model"?

(And How The Answer Can Help You Make More Sales!)

What keeps a model kitchen "model"? How long will it stay that way?

Those are the questions we're asking 40 million people—readers of *The Saturday Evening Post*, *Country Gentleman*, *Better Homes & Gardens* and *Time Magazine*.

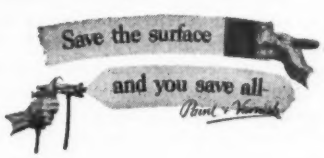
We give them the answer, too, in four words: top quality, durable finishes. It's these engineered finishes that keep a model kitchen and appliances looking clean—new—always just as wonderful as the day they were made.

It's the finish that more and more people are double-checking before they buy. They've learned that *the better the finish the better the buy*.

And, turn it around—the better the finish, the better your chance of selling your product.

For your product will stand better, competitively, if it has a modern durable finish that resists wear, abrasion, stain, and anything else that might come along to discolor or damage its beauty and durability.

Consult an Industrial Finish Engineer. Let him design the proper finish for your product. Let him engineer a finish that meets the service requirements of your product. Remember, many of your customers *start buying with the finish in mind.*



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NEW MATERIALS & EQUIPMENT

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Use this postage-paid card to obtain further information on products mentioned on these two pages and on literature listed on the following page . . .

1038-M

Permanent Gloss Standards by National Bureau of Standards

Permanent gloss standards covering the entire gloss range of non-metallic commercial materials are now available from the National Bureau of Standards. These standards may be used to calibrate any 60-degree specular glossmeter in the range from matte to high gloss. Sets of the 60 degree specular gloss standards may be ordered from the *National Bureau of Standards, Washington 25, D. C.*, for $70 per set.

1039-M

Buffer Drum Uses Standard Width Abrasives

"Cone-Loc Drum Sander" has been developed by *American Diamond Saw Co., Portland, Oregon,* to permit use of less expensive standard strip abrasives. It is a split drum, cushioned with rubber, the halves of the drum being locked into a solid unit by a cone type washer. Light weight adapts it for use on a flexible shaft. Available in sizes from 6¼" to 12" diameter, and various standard widths and bores.

1040-M

*40 and 60 Watt Slimline Fluorescent Lamps

A 48" 40-watt and a 72" 60-watt slimline fluorescent lamp, both having the same construction as the 75-watt size, are now produced by *Sylvania.* They have the instant starting feature and 6,000-hour average life rating on a 12-hour cycle. They have 22 per cent lower surface brightness, with 20 per cent more lumens than T-8 types. The 40-watt lamp can be used in present 40-watt instant-start fixtures, by changing from bipin to single-pin lampholders. No ballast change is required.

1041-M

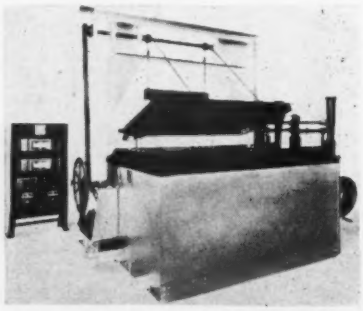
Portable Tensile Tester

The Model PO-40 Portable Tensile Tester is particularly adapted for testing pipe welds and other types of welds where on-the-job testing is preferable. Machine's capacity is 40,000 pounds and it can make tests on specimens from 6" to 13" in length and up to ⅜" thick and 2¼" wide. The tester's operation is hydraulic, by means of a hand pump integral with base, and it is light enough (slightly over 200 pounds) to be carried by two men. *Steel City Testing Machines, Inc., Detroit, Mich.*

1042-M

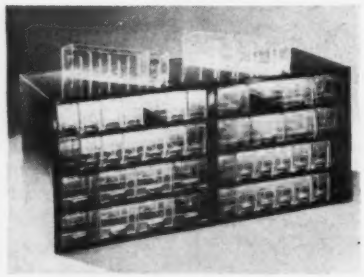
Descaling Furnace

Portable, I-beam based, gas-fired salt bath for descaling processes on stainless steel parts is now marketed by *James H. Knapp Co., Los Angeles.* This unit can be fired with natural, artificial, or any of the LP gases. It is welded steel, heated by two immersion tubes equipped with air-operated eductors to insure proper travel of gases. It operates around 930°F. All burners are electrically ignited and have flame failure cutouts. Heat is regulated by an automatic temperature control and overtemperature cut-out.



***Items evaluated by Western Industry's technical advisors on basis of information supplied by producer.**

1043-M



Small Parts Storage Trays

A new combination of metal shelf racks and two different sizes of plastic trays is brought forth by *Andrew Technical Service, Chicago,* as a solution to the problem of small parts storage. Trays measure (1) 11⅜ by 2 by 2¾ inches, and (2) 11⅜ by 3¾ by 2¾ inches. They are molded polystyrene, with an index card slot and molded-in finger pull. Each tray has four removable partitions.

1044-M

*Non-slip Floor Wax

Now, according to the *Penetrone Co., Tenafly, N. J.*, you can enjoy the beauty of waxed floors without risking the slippery surface. They put out a new non-slip wax which, they say, makes most flooring materials safer than they are unwaxed. Contains Prime No. 1 Yellow Carnauba, is easy to apply and dries fast. Mechanical buffing not required, but it will not affect slip resistance. This wax is non-inflammable, contains no solvents, and is recommended for use on asphalt tile, rubber tile, mastic, linoleum, concrete, wood, and cork.

1045-M

Contour Grinding Of Small Metal Parts

Simple or intricate contours in small metal parts can be ground in large quantities with a new crush grinding machine. One part of machine positions parts for grinding while, on other side of rotating table, the fixture with finished work is ready for unloading and refilling. Machine finishes about four thousand parts per hour. It is made by *The Thompson Grinder Co., Springfield, Ohio.*

1046-M

Industrial Oven Has New Features

Two new design features have been incorporated into the Sunbeam Stewart industrial oven. Inverted muffle section converts furnace from semi-muffle to full muffle for atmosphere hardening; removable rear plug permits center heating of long bars. Furnace is available with heating space of 4" x 8" x 12", 6" x 12" x 18", and 9" x 15" x 24". It is set on a three-shelf stand to keep parts and tools within easy reach of operator. *Sunbeam Stewart Industrial Furnace Division, Sunbeam Corp., Chicago, Ill.*

1047-M

Midget Log Log Slide Rule With High Degree of Accuracy

The new Pickett 300 is a six-inch long log-log slide rule. Dimensionally stable magnesium alloy body gives it permanent accuracy. Needle-sharp graduations make it easy to read. Sixteen computing scales make it a most powerful pocket rule. Available from *Pickett & Eckel, Inc., Alhambra, Calif.*

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1048-M

*Glass Hat Is Safe, Cool, Vividly Colored

The now famous hard-boiled industrial safety hat has been improved upon in great measure by the *E. D. Bullard Co., San Francisco.* It is made of resin-impregnated fiberglas, is impervious to moisture and acids, passes all dielectric tests. The crown is non-shattering and will not deteriorate with age. Radiation tests show it to be 11.7° cooler than any other safety hat tested. These hats can be produced in practically any color desired. Colors are permanent—pigment is impregnated all the way through the material. And they can make hats that glow in the dark, for tunnel or mine workers, or night construction crews.

1049-M

Heavy-Duty Soldering Gun

Weller Manufacturing Co., Easton, Penna., are now making a soldering-gun for heavy duty work capable of handling 250 watts. This greatly exceeds previous 135-watt limit. Gun contains built-in spotlight and improved tip design, is suitable for electrical, telephone, commercial and industrial soldering.

1050-M

*D-C Welder Uses Plate-type Rectifiers

New d-c welding machines using plate type rectifiers are available from *Westinghouse Electric Corp., Pittsburgh, Pa.* They are available in 200, 300 and 400 ampere ratings. The no-load loss in a 300-amp. welder is 500 watts, as compared to 2,480 to 3,600 watts for a conventional motor-generator welder. The welders efficiency at full load is 66%, as compared to 54% for motor-generator welders. Efficiency increases at reduced load conditions, reaching 73% at 20% rated load.

1051-M

Precision Saw Gummer

A machine that can even up all teeth on a 10-inch rip saw blade and gum the saw in 15 minutes at an average cost of $1.50 is a new product offered by *Belsaw Machinery Co., Kansas City, Mo.* This Belsaw Powered Gumming Machine handles all types of circular saws with ½ to two-inch center holes, in blades from eight to 48 inches diameter.

1052-M

Liquid Plastic With Unique Properties

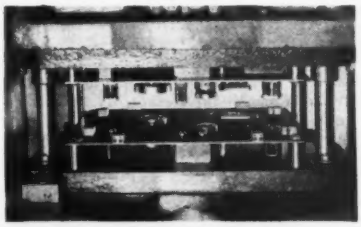
"Glassy-Cast," produced by *Plastic Service, Boston, Mass.,* is a new liquid plastic which is clear, water-white, has strength of 9000 p.s.i., (Baracol) hardness of 45-50, shrinks only 7 to 8 per cent, and has excellent electrical insulating properties. The firm has also developed a molding compound to go with it, thereby enabling limited quantity reproduction at exceedingly low cost.

1053-M

Lubrication For Diamond Wheels and Laps

Stadoil diamond lapping oil is sold with manufacturer's statement that it is the only lubricant specifically designed to lubricate diamond wheels and laps. Use of this oil will prevent loading or glazing such tools, so that carbide surfaces can be brought into the degree of tool finish essential to maximum results.

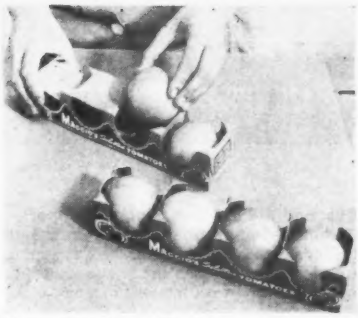
1054-M



Magnetic Perforating Dies

A new and faster way of making up die sets for the piercing of holes in materials up to ⅛ inch mild steel is afforded by the magnetic perforating dies manufactured by *S. B. Whistler and Sons, Buffalo, New York.* On completion of any job, punches and dies, with retainers, are quickly removable and ready for use in a new arrangement. Only the two templates are stored. These templates are all that is necessary to duplicate the original job at any time. Tolerances can be held to .0005, or as close as can be jig-bored. Die sets available in any size.

1055-M



New Produce Pack

This full-view, automatic set-up, cell-type fruit container has deep cutouts displaying all but the bottom of the fruit. Cartons are sturdy enough to be stacked in displays. Possible uses are for peaches, apricots, plums, pears, avocados, etc. Cartons can be packed at maximum speed, and conveyorized.

1056-M

*New Spray Nozzle Generates a Mist

Here's a new nozzle for you users having spray problems where a fine break-up at low pressures is required. It not only looks radically different, but it operates on a radically different principle from any nozzles which have come our way. Manufactured by the *Bete Fog Nozzle Company, Greenfield, Mass.* It has a unique spiral design that produces a finer atomization, yet is practically non-clogging, according to the manufacturer. No vanes or whirl discs required. These nozzles are now produced in various spray patterns and with flow rates from ¼ gal. per minute to 100 gals. per minute.

1057-M

New Casting Process

A metal casting process which simultaneously casts, molds, forges, and coins a product to the finished state and eliminates 60 to 70 percent of the machining operations normally required on a casting application has been announced by *Budds Aero Castings, Inc., Canaan, Conn.* This process achieves an improvement in tensile and yield strength of 10 to 40 per cent, it is claimed. Tolerances can generally be held from .001" to .002". A much finer granular structure with practically no porosity can be obtained, according to the firm.

1058-M

Welding Production Jumps With Superfast Electrode

Eutectic Welding Alloys Corp., N. Y., now produces "Eutec-Hand-Omatic," an AC-DC no-gap electrode, which is merely pressed against the metal and drawn in a line, like a pencil, without any weaving motion. A perfect weld results automatically, with a saving of up to 50 per cent in electrode material.

HELPFUL LITERATURE

for the plant operator who wants to keep informed

2625-L

Dos and Don'ts for Export Shippers—Technical information on correct design, nailing, corner construction, steel strapping, etc., of nailed wooden boxes and crates designed for export is contained in a new eight-page brochure issued by *The Wooden Box Institute, San Francisco.*

2626-L

Aids to Small Business—For $1 the *U. S. Government Printing Office* is offering a packet of eight booklets, each dealing with a different subject of interest to the small businessman. Some of the subjects covered are regulation of pricing practices, sources of loans, trademarks, financial statements, and guides for new world traders.

2627-L

Towmotor Job Study No. 84—Personnel engaged in lumber operations should find interesting the new four-page job study put out by *Towmotor Corporation, Cleveland, Ohio,* which describes in pictures and printed matter how fork trucks were used to expedite materials handling in a plant manufacturing door sashes, interior trim, moulding and panel work.

2628-L

"Developing and Selling New Products" is the name of a new 75-page *Department of Commerce* booklet giving case-histories of 100 business firms that have been successful in the development and marketing of their new products. It is especially recommended for manufacturers, market research and advertising agencies, industrial designers and commercial laboratories.

2629-L

Fluorescent Fixture Catalog—A new 74-page catalog published by *Sylvania Electric Products, Inc.,* contains over 60 photographs of industrial and commercial fluorescent lampholders and starter sockets. Catalog includes information on application, construction, mounting methods, as well as advice on how to plan a fluorescent lighting installation.

2630-L

"Who's Who in Plastics" is a new comprehensive (244 pages) index to the individuals and companies affiliated with the plastics industry, not only in the United States, but also in Canada, England, Europe, South Africa, India, Australia and China. The company section lists company name and address, key officers, position of each, products, methods of manufacture; biographical section contains names of 2989 individuals with their company affiliations and other essential data. *The Society of the Plastics Industry, Inc., New York,* sells the book for $4.50 to members and $5.50 to non-members.

2631-L

How to Build Cranks and Crankshafts—a one-page design sheet—is illustrated with large, clear drawings of typical applications, with special reference to the placement of the weld in each type. *The Lincoln Electric Company, Cleveland, Ohio.*

2632-L

"Solving Industrial Crimes — Case No. 37," describes how a breakdown in the engine at a paper mill was averted in time through the use of an Esterline-Angus graphic instrument; when the chart on the instrument started to register something wrong with the engine, plant engineer was enabled to locate and remove a loose piece of metal before any damage was done. Various types of graphic, charting and recording instruments are described in this pocket-size 15-page booklet put out by *The Esterline-Angus Company, Inc., Indianapolis, Indiana.*

2633-L

Metal-Heating Process Described—Gradiation, the method of speed-heating metals through the use of gas fuels rather than electric current, is described in a 78-page publication newly available to production executives. The principles of the method are outlined and also its use with particular types of metals and metal parts and the advantages derived therefrom. *Selas Corporation of America, Philadelphia, Penna.*

2634-L

Booklet on Cleaning Compounds — The uses of MUL, a new solvent and emulsion cleaning compound recently developed by *The Du Bois Company, Cincinnati, Ohio,* are explained in a new booklet issued by the company which contains cost figures taken from plant operations on the use of emulsion cleaning compounds in industrial washing machines.

2635-L

Portable Conveyor Bulletin — Photographs, application and specification data covering Tote-All bulk conveyors, package conveyors, combination bulk-and-package conveyors and special machines are included in an 8-page catalog issued by *Lake Shore Engineering Company, Iron Mountain, Mich.*

2636-L

Electric Control Devices—*Ward-Leonard Electric Co., Mount Vernon, N.Y.,* has recently issued an 8-page bulletin on the company's complete line of electric control devices for industrial and commercial control applications. Described and illustrated are rheostats, resistors, relays, motor starters, contactors, control accessories and dimmers.

2637-L

"Everything in Safety" catalogs the complete line of personal protective equipment and industrial safety devices put out by *E. D. Bullard Company, San Francisco.* The catalog is divided into five sections: First Aid, Respiratory Protection, Eye Protection, Hats, Belts and Clothing, Miscellaneous Safety Equipment.

2638-L

Portable Stepladders—Steel stepladders, which have casters for easy portability but which also have rubber-tipped legs to lock to the floor and provide a firm base when a person steps on the ladder, are photographed and described in a four-page brochure available from *The Ballymore Company, Bryn Mawr, Penna.*

2639-L

Flotation Described — Originally developed for recovery of mineral values from complex ores, the froth flotation process is now used by many industries: to de-ink paper pulp, recover oils, greases and metal filings from manufacturing wastes, process refuse from food canneries, meat packing plants. The theory, application and results of the process are treated in a new 20-page booklet published by *Denver Equipment Company, Denver, Colorado.*

2640-L

Handling of Large and Small Metal Parts with a mobile crane called Krane Kar is the subject of Bulletin 89 put out by *Silent Hoist & Crane Co., Brooklyn, N.Y.* Bulletin contains a large number of photographic illustrations of the crane at work in metal-working and metal-producing plants throughout the country. Described are its advantages in handling heavy machinery, bundled steel, scrap metal, construction supplies and many other types of materials.

2641-L

Slidefilm Catalog—The increasing use of slidefilms as visual training tools should occasion interest in the 1949 Training Film Annual just announced by *Commercial Films, Inc., Cleveland, Ohio.* The 100-page catalog describes and illustrates 327 films, grouped according to subject, including films on supervisory and executive training, sales training and customer relations, industrial relations. The catalog costs $1 which is credited on first film or equipment purchase made.

2642-L

Dust Collection System Described — A pictorial description of the dust collection system in use in a plant manufacturing ready-mix concrete, and the results obtained through the use of the system, has just been issued by *American Wheelabrator & Equipment Corporation, Mishawaka, Indiana.*

2643-L

Purger Bulletin—How air and other non-condensibles get into refrigeration systems; the adverse effect this has on operating costs and efficiency and what the Armstrong Forged Steel Purger does to prevent it is the subject of the new 8-page bulletin put out by *Armstrong Machine Works, Three Rivers, Mich.*

2644-L

Paper Cups in Industry—The story of the use of paper cups in feeding the workers in two textile mills is one of the interesting articles contained in the new booklet issued by the *Paper Cup and Container Institute, Inc., New York,* which contains suggestions for, and remarks on the advantages of, use of paper containers of all kinds.

2645-L

Westinghouse Plant Described—The extensive subcontracting facilities of the *Westinghouse Electric Corporation's Sunnyvale, California,* plant are described and photographed in a new booklet which shows the wide variety of machine tools available at the Sunnyvale plant and explains how use of the subcontracting service can aid manufacturers in more efficient production. Back page of booklet contains a handy list of Westinghouse plants across the country.

READING GUIDE FOR WESTERN MANAGEMENT

A service for all management levels . . . current literature surveyed and appraised by the faculty of the School of Management, Golden Gate College

The Art of Readable Writing

By Rudolf Flesch, Harper & Brothers, New York, 1949, $3.00

In *The Art of Readable Writing*, Rudolf Flesch has both elaborated upon *The Art of Plain Talk* and introduced various ideas which should provoke discussion by all interested in writing, whether business or academic.

It is difficult to be lukewarm about Dr. Flesch's books. One may subscribe whole-heartedly to his thesis that whatever gets across an idea is good writing, or one may side with his monolithic enemies, the defenders of traditional rhetoric. The admittedly desirable position, an acceptance of certain points and a flat rejection of others, is not so easily come by.

Criterion for "Readability"

Happily aware of the controversy which his publications always cause, Dr. Flesch hammers away at his convictions that (1) rules of composition *per se* impede effective communication, (2) modern problems require distinctly modern techniques of expression, and (3) the true criterion for good writing is the result it achieves, or its "readability." It is this third point which has motivated the revision of his "readability formula," a simple device for determining the reading ease of any given work by analyzing the number of words per sentence and the number of syllables per 100 words. Application of this formula to representative reading materials confronting the average reader does in fact produce startling data, especially when one considers the actual reading ability of the so-called average reader. Incidentally, the office manager who finds that his memoranda frequently "misfire" may well find valuable tips in the chapter "Results of Plain Talk."

Dangers of "Simplism"

That there is merit in what the author says is obvious. That there is also a danger of carrying the Flesch doctrine to extremes is equally obvious. The most apparent pitfall of what John Bainbridge has termed "simplism" is manifested in Dr. Flesch's proposed rewording of a legislative amendment. Surely even the most ardent "plain talker" must be appalled at its implications. And, at the risk of seeming picayune, the reviewer cannot help wishing that the author had not leaned quite so heavily on *The Reader's Digest* and *Time* for his shining examples.

Reviewed by:
MARY FRANCES WINES
Lecturer in English
and Business Writing

Office Management and Control

By George R. Terry, Richard D. Irwin, Inc., Chicago, 1949, $6.00

In this book, Professor Terry of Northwestern University, succeeds in bringing the office manager into at least the outer office of top management. Some will argue that the office manager has no business so close to the front office, but Professor Terry has some sound reasons for his stand. "The typical office manager is responsible for most of the paper work in the large company — and modern business runs on paper," might be called his thesis. (My quotes and my statement.)

Office Management and Control is a scholarly work, and represents the best thinking in the field of office management since the Leffingwell era which took office management out of the "chief clerk" class. Though Mr. Leffingwell's book is still the Bible for many office managers, the more practical minded find it too scientific for comfort. Professor Terry does an excellent job of combining the scientific approach (in the manner of Frederick W. Taylor) with the down-to-earth practical management of office activities.

Many will not agree with the overemphasis on organization, nor with his rules of organization planning, but few will argue with his intent. Professor Terry thoroughly emphasizes the "control" portion of the book title. He does the most complete job on work simplification to be found in any similar book ever published for office managers. The case problems at the end of each chapter make excellent discussion topics and could keep a group of supervisors engaged for hours in hot debate.

While written primarily as a textbook for college students, this work is a most important contribution to the advancement of office management and will be interesting and useful to managers of all types.

Reviewed by:
ROY W. POE
Lecturer in Office
Management

Briefer Guides From The Management Library

Profit-Sharing

By Kenneth M. Thompson. Harper & Brothers, New York, 1949, $4.00

Here is a history and analysis of the profit-sharing movement in America and its implications on our economy. Representative systems of some business firms are outlined.

Proceedings of the First Annual Northern California Research Conference

Stanford Research Institute, Stanford, California, 1949, $2.00

Sponsored by the San Francisco Chamber of Commerce, University of California, Stanford University, and Stanford Research Institute, this Conference was conceived to promote a better understanding of the problems of research in industrial organizations, to explain the benefits and limitations of industrial research, and to acquaint executives with the research facilities of the area. Leaders in business, industry, and research participated.

Trends in Industrial Relations

Bulletin No. 16, Industrial Relations Section, California Institute of Technology, Los Angeles, 1949, $1.00

This publication is the result of a special conference held in observance of the tenth anniversary of the Industrial Relations Section of the California Institute of Technology. Addresses by Alexander R. Heron, Leo Wolman, Lawrence A. Appley, Dale Yoder, and Lee A. DuBridge are included.

Labor Relations & Political Action— A Challenge to Management

American Management Association, New York, General Management Series No. 143, 1949

Includes: The future of labor-management relations. The implications to management of labor's political action. Management's share in the survival of contributory social insurance.

Handbook for Pension Planning

Bureau of National Affairs, Inc., Washington, D. C., 1949. $5.00.

Here is a complete and up-to-date guide written and styled for the layman —the person who approaches the problem of pension planning without the background of law or actuarial techniques. Each of the chapters has been prepared by a specialist in a particular area of pension planning. Their analyses contain numerous illustrations and case examples, and will be especially useful to employers, unions, and others who are concerned with the practical aspects of pension planning.

Reviewed by:
BERNA M. CARLSON
College Librarian

REGIONAL REVIEWS
Olympics to the Coeur D'Alenes

Dollars For Heavy Construction Shine Like the Midnight Sun

Lumber industry takes economic turn for the better; Boeing Campaign gets "atomic bomb transfusion"; Possible power shortage.

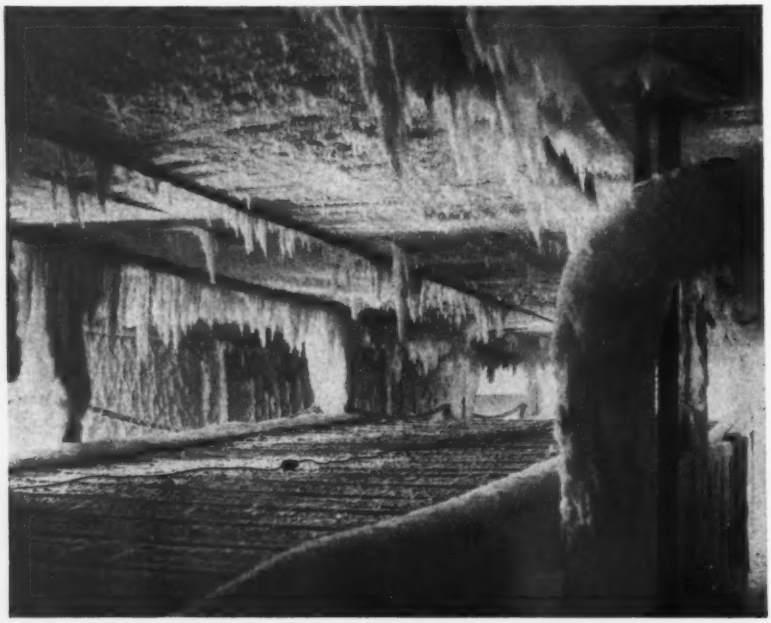
SEATTLE — Heavy construction is the brightest spot in this far Northwest corner of the nation right now. The Associated General Contractors at their recent mid-year meeting in Indiana reported with exceptional enthusiasm that a record volume of 19 billion dollars of new construction was estimated for the year 1949 and a similar amount in prospect for 1950.

The State of Washington is certainly getting its share in those huge budgets and contractors are working big crews on power and reclamation projects, highways, and large commercial buildings.

Within the environs of Seattle construction is now going forward, or is immediately projected, on what is perhaps the most ambitious program of big building construction this city has ever seen. This includes a wealth of new buildings for the University of Washington, a $7,000,000 public service building, several large apartments, a new federal reserve bank, and a mammoth shopping center just beyond the north city limits for one of the leading department stores.

Spread over a large area in the eastern part of the state are many projects going full steam ahead. These will further harness the mighty Columbia River for power and spread life-giving waters over hundreds of thousands of now arid acres. Highway construction is moving forward with an ambitious program made possible with huge new revenues derived from a 1½ cent increase in gasoline taxes by the last legislature.

• A freezing tunnel now in use at Washington Packers, Inc., Sumner, Washington.



Elsewhere in the transportation field, the long slumbering idea of constructing a common carrier on the Western face of the rain-swept, rugged, primitive and timber-rich Olympic Peninsula has again been revived. The present advocate is Ted S. Goodyear, former state forester and now supervisor of the state's huge Sustained-Yield Forest No. 1 which is situated in the Western Olympics.

Chances that this project may actually materialize seem much better now than in previous years. Principal reason is that in the area lie some of the last great stands of virgin timber in this state, which once led the nation in lumber production. One common carrier railroad now has a branch line running along the northern face of the Olympics. Projecting up from Grays Harbor in the Southwest corner is a private logging railroad. A probable solution would be to tie in these existing facilities.

The Western Olympic region has virtually no population, has just about the heaviest rainfall in the United States, but it can grow timber in heavy volume. Under sustained yield forest management, which is a practice being adopted widely and rapidly all through the timbered areas of the West, the state would operate its timberlands to provide a perpetual supply of timber for industry.

(Continued on page 74)

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75 YEAR

(Continued from page 72)

Olympic timber is mostly pulp species. Utimate development visualized by Goodyear would call for construction of new Kraft Pulp and Paper Mill capacity for the manufacture of container board and wrapping papers. Such new capacity would probably be either (or both) at Port Angeles on the north, or at Grays Harbor. Both are now important pulp-paper centers.

Airline Expansion

Northwest Airlines has announced that it plans to spend about $500,000 to expand its hanger and other facilities at the big new Seattle-Tacoma International Airport (Bow Lake). Northwest now has established one of its main bases at this new airport and is reaching out more and more for Alaskan and Oriental flight business. They plan to schedule Honolulu and Orient Stratocruiser flights along with its transcontinental program. Transpacific flights are to begin this Fall. Seattle-Tacoma airport will be used as a base for Northwest's Great Circle Route flights to the Far East.

But there are some dark spots in transportation, too. One of them is the long-drawn out public hanging of Hawaii by the longshoremen who follow Harry Bridges' Communist leanings. A sorry example of this industrial strife, which has revived the famous impatient utterance of a famous Eastern capitalist of a past generation, to wit, "The public be damned!" is found the almost ludicrous meanderings of a couple of barge loads of Hawaiian pineapple to Pacific Northwest ports.

Case of the Pineapple Barges

One barge, loaded with 115,000 cases of pineapple tidbits, in tow of an ex-Navy seagoing tug, attempted to put in at several points on Puget Sound but always found the CIO pickets on hand to disrupt proceedings. The tug had a great difficulty in refueling. At current writing this barge has shown up on the Columbia River at a new port at The Dalles at the upper end of the lake formed behind Bonneville dam. But the pineapple was still aboard behind longshore pickets.

In the meantime, however, another tug with another barge of pineapple slipped quietly into the little port of Tillamook on the Oregon Coast, went a mile or so upstream from the regular docking facilities and proceeded to unload with laborers.

When the temporarily outsmarted longshore pickets caught up with the scene, trucking by AFL teamsters halted briefly until their union leaders came up with a ruling that they could haul, despite pickets, if the pineapple cases touched the ground before being put on trucks. Thereafter the derrick used in unloading the barge touched each sling load on the dock briefly before swinging it to the trucks.

Speaking of fruit, whose growing and packing is a very important industry in Central Washington, the current year has been quite disastrous. A terrific drop in prices from last year's levels has worked a lot of hardship and caused hundreds of tons of fruit to remain unpicked. By way of example, one grade of pears which last year fetched $110 a ton to the grower brought him only $30 a ton in 1949. The main consolidation in the fruit industry is that 1949 was preceded by several years in which prices and crops were very good.

Lumber Industry

The lumber industry, one of the mainstays of industrial activity in the Western portion of Washington, seems to have bumped off the bottom and the current outlook is considerably brighter.

Latest available reports (for August) show a sharp upturn in demand, the largest volume of business since a full year ago. Increased construction of homes and industrial and public buildings is credited as a principal cause for upped demand, but it is also known that dealer's bins have been pretty well cleaned out while prices were sagging, and are in need of restocking.

Plywood is also very definitely in better position within the past 30 days. There has been a little stiffening of prices, except on the cheaper grades, and mills are reported booked pretty well up for the next 60 days.

Both plywood and lumber are important payrolls in Washington, the former having made very significant gains within recent years to crowd its older brother for top honors.

Neither plywood nor lumber are affected by the wholesale money devaluation which trailed in the wake of the surgery performed on the pound by the British. Wood pulp, however, another forest product very important to Washington, has definitely been hit because pulp has no screening protection of tariff duties. Devaluation will have little effect on another important Pacific Northwest commodity, canned salmon, because it too carries a high tariff on imports.

Incidentally, commercial fishermen have been landing good catches of salmon, tuna and bottom fish for the fresh and frozen markets.

There's another product of the sea which gets notice about once a year in this region, namely, the pelts of fur seals. A Navy ship docked in Seattle in September with a $4,000,000 cargo representing the annual take from the famous rookeries on the far north, foggy Pribilof Islands which have long been under Uncle Sam's protection.

Save Boeing

Thundering drums of the "Save Boeing for Seattle" campaign have by now slipped off page one to the more routine news sections but the battle to keep this big payroll intact in the Puget Sound metropolis is still going on. It has enlisted support from other Western States and even the Atlantic Coast. However, nothing final seems to have been decided up to the present moment, although some important hearings have been held.

The military doesn't want two important types of big bombers manufactured in one location and its plans, which as yet have not been changed by the "Save Boeing" campaign, is to manufacture the newer jet bomber at Wichita, Kansas, in the government-owned plant which is operated by Boeing. Meanwhile Boeing employment has dropped about 1500 recently from the postwar high of 23,700.

In the shipyards, which for the most part have been rather gaunt ghosts since the boom of wartime construction, there seems reasonable prospect that Puget Sound yards will get a fair slice of an overhauling program on some 53 government-owned ships in the reserve fleet.

Save Alaska, Too

Also on the defense front, the Boeing campaign served to spotlight emphasis on greater protection for this corner of the United States and, even more importantly, for Alaska, Seattle, and the whole state of Washington for that matter, has long been keenly alert to proper defensive measures in the northern territory. As is well known, there have been extensive military preparations in Alaska, beginning with Pearl Harbor and continuing to date. The Puget Sound area has naturally benefited as a supply point.

Now, however, with the resounding news that the Soviets have acquired the atomic bomb for their own, there has been a great new surge of emphasis on greater defense measures in Alaska. This is not alone a civilian demand. The military are joining in. Prospects are for much greater activity in the North. There has been particular complaint that the military is sadly lacking in adequate troop housing in Alaska.

The threat of power shortage looms again, despite the abundant resources of the region and the big construction work now going on to increase current output. Curtailment of new or additional uses of power has been asked of

the Washington Public Service Commission by the Pacific Northwest Utilities Conference Committee, the management end of the regional power pool. C. A. Erdahl, commissioner for the City of Tacoma, which has its own municipal system, introduced the resolution asking for curtailment. He seeks three-state action by Washington, Oregon and Idaho in order to "have a uniform approach to the public." Both private and public utilities are joining in the resolution. Engineers for the Northwest Power Pool have predicted power shortages—which last winter reached an acute stage in and around Seattle—and those in the know claim that power needs of the region will not be satisfied until 1956 or 1957.

Mounting Taxes

Another minus factor in the situation is that Washington's state taxes per capita are continuing to mount. The latest figures out show the per capita levy for 1948-1949 is now $79.62, up $2.56 from the previous year. In this sad-to-contemplate field Washington, by contrast, far outranks the neighboring states of Oregon, California, Montana and Idaho. The Governor is endeavoring to effect some economies. But he is plagued by run-away public welfare laws, red-inspired, with a seemingly obvious desire to wreck the state's financial stability. This is costing fabulous sums and investigations now being backed vigorously by the press show ridiculous abuses. The only rosiness in this vista is that public indignation will be aroused. This will correct this fantastic legislation in due course and bring it down to a practical basis without sacrifice of sound public welfare aims.

Labor

Labor seems to be in a "wait and see" state, watching closely the outcome of the steel strike threat before making any moves here. Seattle bank deposits reached their highest level of the year in August, up slightly over the same month in 1948.

And here, in conclusion, is the newest case of "government interference" to be contended with by business and private citizen alike in Washington. Every owner of a truck, bus or automobile, when he registers his vehicle for a 1950 license, will be asked to report the number of miles traveled in 1949, number of months the vehicle was operated, and the average number of miles obtained per gallon. No, it's not compulsory it seems. The state joint fact-finding committee on highways, streets and bridges would like to have the information. With it, some say, they will have a fairer base on which to sock each vehicle class. Some quips are suggesting an additional question, "How much taxes are you getting to the mile?"

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Denver Hums with Activity While Pueblo is KO'd by Labor Strife

Busy Denver seeks more business; Oil wells sprout all around; Denver businessmen support education; Another cost of war.

DENVER — Spurning Denver's historic "trading post". role, Mayor Quigg Newton has set up an industrial bureau to cooperate with industries looking for a home.

"We are a big city, whether we want to be or not," declared Denver's youthful mayor in one of his Sunday radio reports-to-the-people. "Denver is no longer a trading post in the remote frontier of the Rocky Mountain West. We still occupy our position of pre-eminence in the vast area surrounding us, but that area, too, has grown in economic stature. It no longer is the frontier, but rather an established, vital, important segment of the national and international economy. Denver *must* become bigger . . . "

Mayor Newton hastened to reassure his well-placed friends who say it is quite satisfactory for Denver to grow but it mustn't ever have a lot of those awful smokestacks and smells and labor leaders who upset the nice, docile, working people of a community. Certainly not, he said. Denver's new industrial activity must be selected carefully. As he put it, quite delicately:

"We must at all times have clearly in mind what type of city Denver is and what type of city it should be in the future. . . . There are some industries which would be inappropriate for Denver and for which Denver would be inappropriate."

• More than 400 personal planes were parked at the Colorado A & M College airport recently, when the 1949 national convention of Flying Farmers hit full stride in Fort Collins. This photo, looking south, shows one portion of one parking area only.

While Denver's vigorous and exceedingly efficient mayor was telling his electorate that Denver must grow wisely and cater to the right sort of industrialization, the No. 2 Colorado city, Pueblo, was having a bad case of Mickey Finn. Nobody could remember when Pueblo had been so very dead as during the double-jointed strike.

It was the strike of Missouri Pacific workers who first put Pueblo in the doldrums this fall. The usually-bustling little city at the junction of the Arkansas and the Fontaine qui Bouille looked like Central City after the musicians, gamblers, and Mae West had pulled out for the season. An important junction point on the Mo-Pac, Pueblo was feeling pretty sorry for itself over the railroad strike when worse calamities befell it.

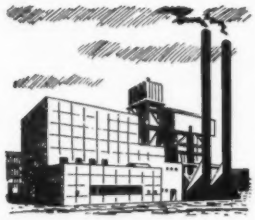
Poor Little Pueblo

John L. Lewis called out his coal miners for his biennial boost for the petroleum industry, and Pueblo is surrounded by coal mining towns that promptly went to sleep. Mr. Lewis decided he'd better let the mines open again in the Western part of the country, but by that time the steel workers had struck, closing the big Minnequa plant of the Colorado Fuel & Iron Company at Pueblo along with other steel plants all over the country. That was Pueblo's knockout blow. At this writing, there seems to be little hope of an early settlement of the steel strike and the mines haven't anybody to produce coal for, and even the Missouri Pacific strike seems to go on and on and on. . . .

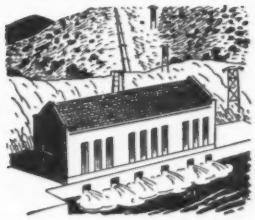
Maybe Quigg Newton is right, after all. His town hasn't any big payroll industry to compare with Pueblo's steel plants—but even with the southern part of the state in a trance, Denver hums with business running well ahead of 1948's record high and employment so

(Continued on page 78)

Tally FIVE and the SIXTH Coming Up!

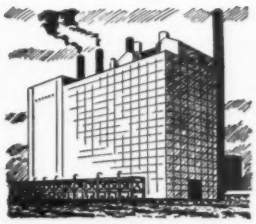


Kern Steam Plant, near Bakersfield, began turning out 101,000 horsepower for California early in May, 1948.

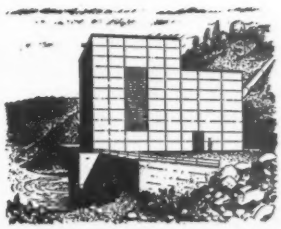


Electra Powerhouse, on the Mokelumne River, produces 133,000 horsepower. It came on the line in July, 1948.

West Point Powerhouse, also on the Mokelumne River, added another 21,000 horsepower in November, 1948.



Station "P", the steam giant by San Francisco Bay added a big 298,000 new horsepower in February, 1949.



Colgate Powerhouse, on the Yuba River, started pouring out 40,200 horsepower for California in June, 1949.

In the past sixteen months, five new powerhouses have been built and put into operation in P.G. and E.'s postwar expansion program. And a sixth powerhouse — new Cresta hydroelectric plant on the Feather River with 101,000 horsepower installed capacity— soon will be in service. To stay ahead of service demands, we will have some 4,000,000 horsepower available in 1951, nearly double the prewar capacity.

Work Never Stops on our Power-building Program

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WI-111-1149

DENVER REVIEW

(Continued from page 76)

low the employment service thinks it is establishing some sort of record.

Lots of Little Things

Queer things are happening all over the Rocky Mountain Empire. They're putting liquified (pulverized) gilsonite, a mineral that is barely a first cousin to petroleum, into that Standard Oil of California pipeline that moves Rangely Field crude oil from Colorado's great oil field to Salt Lake City refineries. American Gilsonite recently completed a $300,000 plant at Bonanza, Utah. The gilsonite used to be trucked to Craig, Colorado, and shipped by rail over the Moffat Road to Denver and faraway processing plants.

And Curt Freiburger, successful Denver advertising man with one of the region's busiest agencies, has taken on a man who is an expert in the merchandising of women's wear and textiles, fresh from Dallas and the magical Nieman-Marcus realm. Denver's well-concealed but rapidly-expanding needle trades factories have operated to date on the theory that the fewer people know about the sweet thing they have in Denver, the better off will be those already on the ground. But Gene Thomas, the new man at Freiburger's may change all that with the backing of some live manufacturers who think Denver's eminence in the garment making field ought to be acknowledged—yea, even bragged about!

Take a run out on the north edge of town some time and see what has happened to the Eaton Metal Products Company layout. It spreads all over the map. Other Eaton plants are located at Albuquerque, Billings, Casper. . . . Looks like Eaton's "Tanks for your business," is being said to a lot of people these days. Most people don't realize that in addition to manufacturing all sorts of tanks (big tanks, little tanks, truck tanks, tanks to execute people in . . .) Eaton also is distributor for many prominent lines of equipment for filling stations, bulk plants and other such. During the war this plant kept 450 men busy night and day making prefab ships for the armed forces, an important unit in Denver's celebrated "shipyard in the Rockies."

Everybody's Oil Wells

Oil discoveries are keeping things popping all over the Rocky Mountain region these days. So reports the Oil Reporter, bi-weekly news magazine published in Denver which claims to cover oil developments "all the way from the Mexican Border to the Arctic Circle."

Frontier Refining Company got a 3,600-barrel-a-day well first crack out of the box in testing its Fiddler Creek acreage, and hurriedly launched No. 2 while picking a location for No. 3. Fiddler Creek oil runs 40 to 48 degrees gravity than which there is no better in the Rocky Mountain area. And the new pipeline has just been finished, so now big, genial Bud Robineau, Frontier president and principal owner, can pipe his oil right into his big refinery at Cheyenne. Incidentally, Frontier is stealing a march of some kind on other marketers in the central Rocky Mountain area by putting out extra-high octane gasoline in the "regular" pumps of all his distributors. Sounds goofy, but the word gets around and Frontier dealers are doing a land office business and gallonage figures show Frontier leading the parade by a big margin in increase over 1948.

Slick Stuff All Around

But lots of people are getting oil. Jimmy Stewart, the movie actor, was one of a group with Continental Air Lines' president Bob Six, who brought in an 800-barrel well in Utah in the Ashley Creek area. Nearby is Carter Oil's Roosevelt discovery which puts out the region's queerest oil, a high-gravity product that turns into a solid on exposure to air. Atlantic Refining Company, after punching a lot of useless holes into the prairies of the Rocky Mountain area, brought in a lulu of a well just beyond the edge of the old Lance Creek field, at Lightning Creek, Niobrara County, with plenty of acreage to provide a long and fruitful payoff. Farmers Union Central Exchange of Minneapolis, which has regional headquarters at Billings, Montana, brought in another important discovery in Hot Springs County, Wyoming, at Murphy Dome in the Big Horn Basin. Farmers Union has a refinery at Laurel, 14 miles from Billings, on the pipelines between the Wyoming oil fields and the big refining center at Billings.

Montana Refineries

Those refineries at Billings are hard to believe unless you've seen them. Carter's behemoth about eight miles east of town seems to be a whole city in itself, and now comes Continental with its $9,500,000 refinery just south of Carter's old refinery and a bit east of Great Western Sugar Company's largest factory. The new Continental plant covers 118 acres, employs 150 men and processes 7,500 barrels of crude daily.

Incidentally, the Elk Basin field on the Wyoming-Montana border, not far from Billings, now isn't far behind Montana's Cut Bank field in production and is well ahead of other Montana fields, even though most of its production is in Wyoming and doesn't count in such tabulations. Even so Elk Basin in July produced 203,724 barrels compared to 290,723 for Cut Bank, 137,961 for Kevin-Sunburst and much lower totals for other Montana fields, including Pondera, Cat Creek, Big Wall, Reagan, Dry Creek, and Ragged Point.

L.A.E.F.

In Denver a number of businessmen are putting real life into something called the Latin American Education Foundation. As its name indicates, the idea is to provide assistance for Spanish-speaking boys and girls of promise who could do with a first-class education. There are a lot of industrialists and other businessmen who have a very real sympathy with the "Mexicans" whose labor has been important in the evolution of many important industries in the West. A Denver attorney named Bert A. Gallegos is president of the organization, of which more probably will be heard as its work becomes better known and additional financial support is provided by friends in the Western states area.

Another Cost of War

Historians may conclude that the second World War left America a country of crippled and disabled war veterans. In Colorado alone, 50,000 veterans have applied for pensions of disability compensation. This is one of every three veterans. So far, only 22,000 have succeeded in getting money as a result of their petitions, but the number is growing rapidly. Of the 28,000 veterans who want disability pensions but have not yet been able to get them, about one-fourth have proved that they have service-connected disabilities of less than 10 per cent. They will have no difficulty getting compensation if their cases become worse. Another quarter of the cases not now drawing money have done so already but have improved sufficiently not to be eligible for the money today.

The amount of money now being paid to veterans for disabilities is a staggering sum but nothing to what it will be a few years from now. This money will keep buying power up for generations to come.

6,000,000 Active Cases

Of the more than six million active cases in Uncle Sam's files, payments now are being made to 2,300,000 veterans of World War II. The other 3,700,000 includes the group with less than 10 per cent disability at present, those who previously have drawn disability pensions and those who applied and were rejected in spite of the liberal policies of the Veteran Administration.

Western Industrial Aid to War-Torn Europe

An air-borne overseas shipment of Winslow filters and elements has been acclaimed by the Economic Cooperation Administration as tangible evidence that United States industrialists are aiding in the reconstruction of a war-torn world, according to William G. Nostrand, newly appointed vice-president of Winslow Engineering Company, Oakland, California.

William G. Nostrand (left), vice president in charge of sales and engineering, Winslow Engineering Company of Oakland, confers with J. E. Ringger and Earl Bornfield. Ringger heads the Belgium firm receiving a recent shipment to that country of 32 cases of filters and elements. Bornfield heads the Oceanic Export Company, export division of Winslow Engineering Company.

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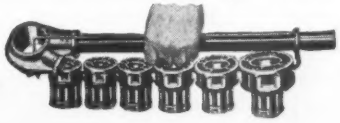

RIDGID

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THE RIDGE TOOL CO. • ELYRIA, OHIO

New Steam Plants Set to Replace Hydro-Electric Power Generators

Utah power companies cannot afford to wait for completion of scheduled reclamation projects, while competition takes over.

SALT LAKE CITY.—A construction program to increase electric generating capacity of this area by 82 per cent by the end of 1953 is being pushed by the Utah Power & Light Company. Foundations for a new $10,500,000 steam-electric unit in Salt Lake City are being laid and another $7,100,000 steam plant at the mouth of Provo Canyon in Utah County is about 25 per cent completed. Other units are scheduled over the next five years.

The Salt Lake City plant, which will have a capacity of 63,000 kilowatts, is slated to go into operation by August of 1951 and the 43,000 kilowatt Utah County unit will be completed by next April.

$12,000,000 Per Year

Estimated cost of the over-all five-year program is $61,000,000.

One effect of the expansion will be to change the company from a primarily hydroelectric to a steam generating system. Last year, for example, only ten per cent of the power distributed by the company was produced by steam. But by the end of 1955 the ratio will be changed to 55 per cent steam generated.

This shift in electric power sources is being made in the face of ambitious planning for large hydroelectric developments on the upper reaches of the Colorado River. But the company management, faced with a rapidly increasing power demand from month to month and year to year, cannot wait for the multiple-purpose reclamation projects without running the risk of being caught short and thereby blowing some wind into the sails of the public power crusaders. The view of George M. Gadsby, president, is that if and when the hydroelectric is made available in abundance, the steam plants will still be needed for firming purposes.

The added generating capacity will not all represent new business for the state's coal industry. The company recently signed a long-term contract with the Salt Lake Refining Company (a subsidiary of Standard of California) for refinery pitch to be burned in the 63,000 kilowatt Salt Lake City unit. The petroleum residue will be piped a short distance, from the new refinery to the generating station. Consumption is estimated at about 120,000 gallons per day or 43,700,000 gallons per year.

The new Utah County unit, however, will burn pulverized coal and it is expected that generating units not yet under construction will use coal.

The use of petroleum pitch for power production is new in this area.

Incidentally, some of the refinery residue fuel will be a by-product of another of the state's natural resources—Uintah basin gilsonite. This hydrocarbon is currently being pulverized and fed into the Rangely-Salt Lake pipeline which feeds the refinery. But whether the exploitation of this product can attain large industrial proportions depends primarily upon development of the low cost mining procedure.

The American Gilsonite Company, partly owned by Standard of California, is carrying on test open-cut operations which are being watched with intense interest. If this drag-line hopper method proves to be successful, and meets expectations cost-wise, there is a probability of a large development at Bonanza, where the gilsonite veins are located.

As Earl F. Goodner, vice president of the company, points out, the final test will be the end cost of a barrel of oil produced from the gilsonite compared to the cost of a barrel of oil produced from a well.

Two conversion methods — coking and hydrogenation — are under study. Mr. Goodner estimates that the known reserves of the hydrocarbon would produce 11,000,000 barrels of good gravity oil and 80,000,000 tons of high grade petroleum coke by use of the coking method. If hydrogenation should prove to be more feasible, the amount of gasoline and Diesel fuel would be greatly increased.

Business Is Good

Sales tax collections in Utah simply do not support the frequently voiced complaint of individual business men of this area that business is off. Collections for August were up 11.7 per cent from August of last year. And the first two months of the fiscal year beginning July 1 showed a 6.1 per cent increase over the corresponding period for last year.

The last legislature made one change in the sales tax which would increase income from that source—imposing the levy on sale of used automobiles by persons other than registered dealers. But returns from this extension were not reflected in the foregoing comparisons.

Gasoline and Diesel fuel tax collections for the first two months of the current year exceed collections for the corresponding period of last year by 3.2 per cent.

When These 6,377 Fasteners Pay Off!

Dark sky . . . wind . . . devastating rain mean there's no time to lose. So you give 'er everything she's got and pray you'll get in most of the crop before it's too late. That's when the holding power of the 6,377 fasteners in this combine really pay off.

1867 bolts . . . 415 cap, set and tapping screws . . . 1840 rivets . . . 2255 nuts form the steel network that locks the framing members of this combine together.

Because these fasteners are called upon to hold their own on a rugged day-in and day-out schedule, top quality is essential. That's why Russell, Burdsall and Ward with 104 years' experience still carries on intensive research and development work to improve fastener holding power further.

It is unsound economy to use inferior fasteners, since the price of fasteners is such a small part of the total product cost. It isn't the initial price but the cost of *using* fasteners that counts.

To attain *T*rue *F*astener *E*conomy, you can save assembly time, reduce plant inspection, and get the maximum holding power per dollar of fastener cost with a dependable quality fastener. *T*rue *F*astener *E*conomy contributes to the kind of production savings that put more and more combines on U. S. wheatfields every year. It is this type of contribution to major American industries that explains why—for over 104 years—RB&W has been *making strong the things that make America strong.*

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Plants at: Port Chester, N. Y., Coraopolis, Pa., Rock Falls, Ill., Los Angeles, Cal. Additional sales offices at: Philadelphia, Detroit, Chicago, Chattanooga, Oakland, Portland, Seattle. Distributors from coast to coast.

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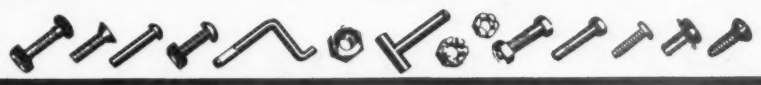

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ST. LOUIS — *and Other Principal Cities*

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BETTER MOTORS

FOR MORE THAN A QUARTER OF A CENTURY

THE WEST ON ITS WAY

ALASKA

CEMENT DISTRIBUTION DEPOT—Cement will be hauled in barges from Seattle to Alaska, according to plans by Permanente Cement Co. Distribution will be from a $200,000 plant that firm is planning to build in Anchorage next spring. This new 100,000 barrel sacking center and distribution depot will be used to prepare cement for shipment throughout Alaska, thus saving an estimated 25 per cent in cost.

ARIZONA

FURNITURE FACTORY—Traders Furniture Company, employing more than 20 workers at the present time, is operating in a portion of the old AiResearch plant at Sky Harbor. The firm has leased 16,000 square feet of floor space in the building for factory and warehousing purposes.

NEW—AND SWEET INDUSTRY—Desert Star is the brand name of a new line of table and fountain syrups now being manufactured at 4500 N. Central Ave., Phoenix. Leon Yablon, formerly of New York, is the owner.

SPRING MFG. CO. OPENS BRANCH PLANT—Arizona Spring Co., a branch of the Modern Spring Co. of Los Angeles, is now operating in quarters in the Aviola Building, Phoenix. Bed springs and allied wire products are being manufactured and assembled to supply mattress and furniture factories. Raul Marin of Los Angeles is owner.

CALIFORNIA

VICTOR BUYS MILLS ALLOYS—Victor Equipment Co. has purchased for 5,100 shares of its capital stock, the business and assets of Mills Alloys, Inc., Los Angeles manufacturing firm, as of Oct. 1. Included in this deal are the physical assets of Mills Alloys such as inventory, machines and equipment, the company's trade name, all patents, trademarks, and formulas. Victor will continue to operate these facilities at the same location, and will designate the operation as the hard-surfacing division plant of Victor Equipment. Mills Alloys makes all types of blasting nozzles and all types of tungsten carbide hard-surfacing rod.

MONTAGUE-HARRIS & CO. MOVES—Montague-Harris & Co., dealers and distributors of metal-working machinery, have leased an 8,000 square foot building at 3509-3513 E. Olympic Blvd., Los Angeles. Operations formerly carried on at 925 W. 2nd St. have been moved to the new location. Main office is at 1075 Folsom St., San Francisco.

$400,000 AIR CONDITIONING PLANT—American Blower Corp., Detroit, has purchased a 10-acre site on the corner of W. Ave. 132 and Merced St., San Leandro. They plan to build a 40,000 square foot initial production unit—a manufacturing and assembly plant immediately. Operations are scheduled to begin in this building during next January.

$1,250,000 PAINT PLANT—Pittsburgh Plate Glass Co. will build a $1,250,000 ultra-modern paint plant in Torrance, on a 15-acre site fronting on Crenshaw Blvd. Original equipment will permit production of 1,500,000 gallons daily, with sufficient floor area provided to boost production of 2,600,000 gallons daily in the future. The plant will have 157,000 square feet of floor space. It should be ready to go into production within ten to 12 months.

ACME LEATHER PRODS MOVES—from its plant in San Francisco to a new and larger plant on a 6-acre site in Sonoma.

CALL FOR BIDS—will soon be made by Clayton Textile Mills, for a new plant to be erected at Fowler in Fresno County.

FLUOR CORP. LTD. BECOMES LICENSING AGENT—Fluor Corp. Ltd., Los Angeles, becomes sole licensing agent for the engineering and construction of sulphur recovery plants in the U.S. and Canada using the recovery process of Mathieson Chemical Corp., New York.

HERE'S THE NEW TRUCK THAT "TIPS ITS CAB TO SERVICE"

A MACHINE TOOL OF TRANSPORTATION... the New White 3000 is a maintenance man's dream of perfect accessibility ... saves hundreds of dollars a year in maintenance time costs. Workmanship is improved, too. On the job, the White 3000 is easier to maneuver and park in traffic. Saves running time and unloading time. All the quality and proved dependability of White Super Power truck units are built into the White 3000. See your local White Representative for all the time- and cost-saving advantages as they apply to your business.

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POWER-LIFT CAB is an exclusive White 3000 feature. The actuating mechanism is a rugged version of the dependable device operating landing gear on airliners. The turn of a key lifts the cab in less than 30 seconds.

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FOR 50 YEARS THE GREATEST NAME IN TRUCKS

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Growing competition makes it imperative that management take immediate steps to re-train salesmen to again use aggressive selling tactics. To supply this need, Rockett Pictures has produced a hard hitting Series of eight Sound Slide Films titled, "AGGRESSIVE SELLING."

Designed for easy use by the executive, each film delivers complete training on its subject yet remains fully integrated into the Series.

The titles are:

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because you can move materials much quicker. Easy one-man operation handles loads up to 6 tons . . . frees manpower for other assignments. This worm-drive electric hoist performs quietly and economically. Savings accumulated with an ElectroLift will more than pay for its installation. Complete details on the model that suits your capacity, speed and plant layout needs will be supplied by your nearby ElectroLift representative, listed in the classified telephone directory. Or write direct to:

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THE WEST ON ITS WAY

CAMERA PLANT OPENS—in Glendale. Tynar Corp., geared for production of 12,000 units daily and employing 200 men and women, is manufacturing a miniature, all-metal precision camera.

MacCLATCHIE MFG. CO. BOUGHT—by Western Geophysical Co. and Grant Oil Tool Co. Manufacture of oil production tools will continue under the MacClatchie name.

GAS WELL PROGRAM—Buttes Oilfields, Inc., plans to drill enough additional wells in the Corning gas field to insure a daily sustained delivery of 80,000,000 to 100,000,000 cubic feet per day of gas. They have projected a drilling program which will possibly warrant construction of a pipe line from the Corning field to the San Francisco area.

$4,500,000 SEPARATION PLANT—will soon be built by Richfield Oil Corp. to extract natural gasoline from wet gas at the new South Cuyama oil field. Another but smaller plant ($2,000,000) is near completion at the Russell Ranch field.

SAN DIEGO PAPER BOX CO. SOLD—to Chapman Brothers Paper Box Co. Operations will be consolidated at the 1701 Vesta factory. Chapman Bros. have also acquired Denrich Press, Chula Vista job printers.

$8,000,000 FACTORY—and warehouse combination, comprising 1,400,000 square feet is scheduled to be erected on Southern Pacific property in San Francisco, bounded by Fifth, Sixth, Channel and Indiana streets. 600 cars will be parked on the roof. Four 20-ton elevators, 40 feet long will carry huge trucks or trailers to loading docks at each floor. There will be ten eight-ton freight elevators and four passenger elevators. Four railroad tracks will run the length of the building.

• Immediate construction of the world's most modern passenger-cargo marine terminal, costing $6,000,000 is planned by the Los Angeles board of harbor commissioners. Site of this development is outlined in the picture, showing part of the Wilmington district. Matson Navigation will use the new facilities at Berths 195-199. The new terminal includes a wharf 2,270 feet long, two clear-span transit sheds, 200 x 1200 feet and 200 x 500 feet, parking area for 3,000 cars, and new roadways, truck and rail facilities.

PLANT FOR SUPERSONIC INSTRUMENTS—opens at Solano Beach, north of San Diego. The Bill Jack Scientific Instrument Co., which will employ a peak of 500 to 600 persons, will make supersonic instruments for the armed forces.

GLOBE LUMBER DISSOLVED—and will now be operated as a branch of Weyerhaeuser Timber Co. of Tacoma, Washington. Sales from the yard will be wholesale only, and handled by Weyerhaeuser Sales Co.

NEW SAWMILL AT HAMPTON—now under construction by Ed. R. Beebe, former general manager of the Volcanoville sawmill in Eldorado County. He will operate in one of the finest stands of big timber in the area.

FLYING TIGER LINE EXPANDS FLEET—by purchase or lease of six additional planes. Five of them are C-46 types, and the sixth is a C-54.

P.G.&E. BUILDS GASAIR PLANT—at Colusa, with construction award to Gasair Associates, San Francisco. This will be the fourth such plant ordered by P.G.&E., and used to produce propane-air-gas. The others, replacing manufactured gas for complete town service, are in operation at Redding, Red Bluff, and Grass Valley.

PACKARD BELL BUILDS—Packard-Bell Co. will built a $250,000 Los Angeles plant for production of television and radio receivers. Completion is scheduled for next January 1.

THE WEST ON ITS WAY

CALIF. CO. DRILLS IN PERSIAN GULF—Brown Drilling Co., Long Beach, and another firm from Oklahoma City, have contracts to drill wells in the Kuwait neutral zone on the Persian Gulf. Crews will be composed of men recently active in Arabia. Equipment is now in transocean transit.

27 T-6's FOR CHILEAN AIR FORCE—North American Aviation, Inc., will produce at their Downey, Calif. plant, 27 re-manufactured T-6 Texan trainers for the Chilean air force.

WE HAVE MOVED—King Publications, publishers of Western Industry and Western Construction News, have a new San Francisco address: 609 Mission Street. Phone YUkon 2-4343.

FURNACE MFG. STARTS IN S.F.—Lennox Furnace Co., Inc., Marshalltown, Iowa, has started operations in San Francisco, by establishing a warehouse which will be expanded to an assembly and eventually to a full-scale manufacturing branch. At present, the firm has three large factories and 14 semi-manufacturing and assembly plants.

URANIUM FIND—Two prospectors, Warren Loose and Glenn Kerlee, indicate that they have hit upon the richest uranium field yet uncovered in California, near the Sierra town of Bridgeport.

• Above: New Pacific Coast sales office and warehouse of the Dayton Rubber Co., now in operation at 909 E. Slauson St., Los Angeles. The warehouse will be stocked with automotive fan belts, radiator hose, floor mats, air hose for service stations, car heater hose, and agricultural belts. The firm's mechanical goods line includes rubber V-belts and cog-belts for industrial power transmission, and pulleys.

PIPELINES NEED PIPE—And Kaiser will help provide it. In conjunction with Basalt Rock Co., Kaiser announces that a Yoder electric resistance welding unit will be installed in Basalt's Napa plant for production of welded steel pipe in 40 foot lengths, from 22 to 36 inches in diameter. This is the second Western large-diameter welded pipe plant. Consolidated Western at Maywood was the first, and will be augmented by additional facilities at South San Francisco. Basalt's new facility, expected to be ready for operation in early 1950, will use Kaiser steel.

COTTON MILLS MERGER—Merger of California Cotton Mills Co., 66-year old firm, and National Automotive Fibres, Inc., became effective August 1.

ARMITE LABS MOVE—Armite Laboratories, producers of thread and gasket pastes and pipe joint compounds, has moved to 6609 Broad St., Los Angeles.

BOX PLANT IMPROVES—Fruit Growers Supply Co., Susanville, plans to spend $75,000 for a major improvement program in the box factory and planing mill.

$1,100,000 RFC LOAN—Flotill Products, Inc., Stockton, have been approved by the RFC for a $1,100,000 loan for operation activities.

$350,000 FORTUNA MILL—A new type gang sawmill costing $350,000 is being built at Fortuna by Clay Brown Co., Portland. The new mill can cut 35 one-inch boards simultaneously on one run of a log through the rig.

PLYWOOD CHANGE—Crescent Plywood Co., Klamath, Calif., succeeds the California Veneer Co., Klamath firm.

GLADDING, McBEAN CENTRALIZES—Gladding, McBean & Co. is centralizing refractory research at their Pittsburg plant. Operations carried on at their Livermore plant will be consolidated at Pittsburg, and the Livermore plant will be closed.

$300,000 PACKER FIRE—California Sunset Products Co., Merced, suffered $300,000 loss in a fire which destroyed the plant.

"A wholesale outfit such as ours
Needs everything from tape to jars."

"But 'most our needs are satisfied
Right here in town—through Classified."

Looking for hard-to-get supplies? Look first in your telephone classified directory—your handy guide to 'most every supplier in town. When you're ready to buy, find it fast in the Yellow Pages. Just as other buyers will find your products fast, too, when you advertise in Classified.

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The Pacific Telephone and Telegraph Company

THE WEST ON ITS WAY

DOUGLAS OIL OPERATIONS—Douglas Oil Co. of Calif. has obtained parcels of land for development in the Cuyama and Placerita Canyon oil fields, totaling about 215 acres.

FURNITURE PLANT MOVES — Rayco Furniture Mfg. Co. has moved to 1821 E. Randolph St., Los Angeles.

LESLIE SALT PLANS—A 20,000 square foot industrial site at Jones and Beach streets, San Francisco, has been purchased by Leslie Salt Co. from N. Cervelli & Co. Leslie will build a concrete building to house offices and warehouse.

MEDITERRANEAN SHIP SERVICE—Pacific Far East Line has started a monthly shipping service from the Pacific Coast through the Panama Canal to Genoa, Trieste, Piraeus, and Beirut. Four vessels, C-3 types, will be used. Each will accommodate 12 passengers, and each will be equipped with the most modern cargo-handling equipment.

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TRADE MARK REG. U. S. PAT. OFF.

ANTI-FRICTION COMPOUND
★ Solves Toughest Lubricating Problems
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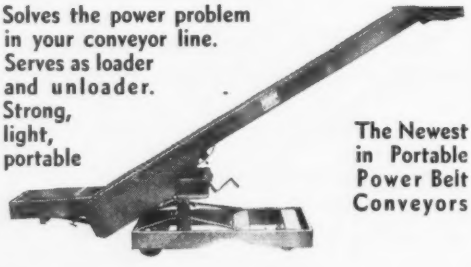
METZGAR—Portable "Power Helper"

Solves the power problem in your conveyor line. Serves as loader and unloader. Strong, light, portable



The Newest in Portable Power Belt Conveyors

Horizontal position is adjustable from 31" to 36". Angular position adjustable from horizontal through 35°. Maximum discharge height — Model 10-P, 88"; Model 15-P, 132".

Basic Length 10' or 15'

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402 DOUGLAS N.W
GRAND RAPIDS 4, MICH.

BURNED-OUT FIRM RESUMES—Steamers Service Company resumes crating and packing operations in San Francisco at pier 27. Former location, pier 54, was gutted by a recent fire.

GERBER FOODS BUYS—Gerber Products Co., baby foods, has bought from Gaylord Container Corp. four and one-half acres of land and an office and warehouse building at 9409 San Leandro St., Oakland. This property has been under lease to Gerber. The deal involved $450,000.

$15,000,000 CEMENT PLANT—A new cement plant will be built in the vicinity of Cathedral City - Palm Springs, at an estimated cost of $15,000,000. McNeil Construction Co., Los Angeles, is prime contractor to Samuel Guiberson.

DENTIFRICE DEAL—Albin Enterprises has purchased the business of DyBasik Laboratories, Inc., manufacturers of DyBasik tooth powder and mouth rinse, both best-sellers on the West Coast in the ammoniated dentrifice field. No changes are planned in formula or manufacturing methods. The present Los Angeles plant will continue to supply West Coast demand.

UNION OIL EXPANDS—Union Oil Co. of Calif. will construct a research laboratory on about 100 acres of land in Brea. Twelve buildings in the suit will contain 120,000 square feet. Cost estimate is $5,000,000.

$1,000,000 RYAN CONTRACT—Ryan Aeronautical Co. now has a $1,000,000 Air Force contract to continue development and fabrication of XQ-2 remotely controlled jet-powered aerial target planes.

PAPER PRODUCTS FIRM MOVES—Coast Maid Paper Products Mfg. Co. is in process of moving into a five-story building at 1000 South Santa Fe Ave., Los Angeles.

COLORADO

PUEBLO PLANT EXPANDS—National Broom Co. plans to build an addition to its Pueblo factory. They produce about 5,000 brooms per day, market them nationally, and employ 150 persons. They also make floor polish, glass cleaner, and spot remover.

NEW ROD MILL DEDICATED—at Pueblo. The Morgan Rod Mill of Colorado Fuel & Iron Co. is capable of producing more than 200,000 tons of steel products yearly, operating on a basis of 15 eight-hour turns per week. See the picture on page 31, this issue of *Western Industry*.

IDAHO

PITCHBLENDE FOUND—in small amounts by the Sunshine Mining Co., at the company's big silver mine at Kellogg.

URANIUM FOUND—in the Coeur d'Alene mining district, as reported by Dr. H. M. Mowery, president of Coeur d'Alene Mines Corp. Extent or value of the find is not known.

MONTANA

CONOCO OPENS REFINERY—at Billings. The $9,500,000 plant is capable of converting 7,500 barrels of crude oil a day into high octane gasoline, as well as turning out numerous by-products including high and low grade fuel oils.

MONTANA BRANCH—of the Bremerton, Washington Engineering Development Corp. will be established in a new plant in Great Falls, to handle increased business from the Montana area. The cast iron welding corporation specializes in automotive cylinder heads and blocks.

NEVADA

GABBS MAGNESITE PROJECT—now under way. Basic Refractories, Inc., and Standard Slag Co., at Gabbs, will more than double their production of magnesium oxide and processed brucite, with Basic Refractory's acquisition of the property of Basic Magnesium, Inc., from the government. This property includes ore deposits, many steel buildings, open-pit mining, crushing and calcining machinery. A kiln 9½ feet by 380 feet is now being installed for January operation. The 40 men now on Basic Refractory's payroll will be upped to about 165.

THE WEST ON ITS WAY

DEAL FOR THREE KIDS—manganese mine and plant near Henderson, near Las Vegas, is forming. State of Nevada has completed negotiations for its sale to private industry. Plans for operation are being worked out. Identity of buyers and terms of sale are not yet available for publication.

NEW MEXICO

NEW ALBUQUERQUE FIRM—is being organized by J. V. Slavik, Ray Leyen, and Howard D. White. Perlite Development Corp. will manufacture industrial furnaces for the processing of perlite, and develop new applications for the mineral. Slavik is president, Leyen is sales manager, and White is secretary and promotion director of the new firm.

OREGON

SAWMILL SOLD—Albany Willamette Lumber Co. sawmill on Copenhagen Lake, near Albany, has been sold by Maxon Williams to Sherwin and B. W. Blackwell, who will continue operating with the Williams 20-man crew.

NEW FRUIT FIRM—Starr Foods, Inc., at Salem, is formed to handle the Salem properties of former Starr Fruit Products Co., Portland. Ralph Quartaroli, head of Stanislaus Food Products Co., is president, and Henry H. Hohweisner is vice-president. This is Quartaroli's first move into the Northwest area.

SALEM BOX CO. LEASES—its box manufacturing department to Friesen Lumber & Supply Co., Salem.

NEW BY-PRODUCT—called Borgana is a chemical development from red cedar shingle manufacturing wastes. It is claimed to be a boiler treatment compound, odorless, tasteless, will dissolve rust and corrosion in boilers, pipes and valves.

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THE WEST ON ITS WAY

AERIAL SEEDING OPERATION—by Crown Zellerbach Corp. is being undertaken over 5,200 acres of burnt-over Oregon timber lands. Evergreen seed pellets dropped from a plane were taken during a bumper harvest of the firm's Washington and Oregon farms.

WOOLEN MILL BURNS—Baron Woolen Mills, Inc., Brigham City, suffered about $100,000 damage in a recent fire.

FIVE FIRMS BURN—at Grants Pass. Properties included the hardware section of the McCollum-Fortna Lumber Co., the newly-established Titan Chain Saw Co., the Rogue Potato Chip Co., a real estate office, and a second-hand furniture store.

ENGRAVER EXPANDS—Beaver Engraving Co., Portland, moves from Broadway and Oak into their new story-and-a-half building in the West Side business area. The new building has a 7,500 square foot area.

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KLAMATH FALLS FIRM CHANGE—Nelson Reed, Reed Tractor & Equipment Co., retires, and Caterpillar Co. appoints Crater Lake Machinery Co. as successor firm. This deal involves the new firm's acquisition of Reed's two plants in Klamath Falls and the plant on the North Pacific highway in Medford.

PENNSALT ADDS—Construction of a $120,000 steel and concrete addition has been started on Pennsylvania Salt Manufacturing Co.'s plant. The new structure will be used as a caustic soda processing plant and warehouse.

UTAH

NEW URANIUM MILL—will be built by Green River Exploration Co. in either Moab, Grant County, or Marysville, Piute County, in southern Utah. The new plant will be of 100-ton daily capacity of uranium ore; costs are estimated at $150,000 to $200,000.

NEW FUEL FOR GENERATOR—Utah Power & Light Co. will burn a low-grade, low-cost residual fuel, new to the Intermountain West, in its new 63,000 kilowatt steam-electric generating station at Salt Lake City. The plant is expected to open in 1951.

PAPER FIRM EXPANDS — St. Helens Pulp & Paper Co., St. Helens, announces a $1,000,000 expansion program which includes rebuilding machines and purchasing some new ones.

FUEL PLANT SURVEY—Representatives of Ford, Bacon & Davis, New York City engineering firm, have made a survey of the Salt Lake City area for the Corps of Engineers of the Bureau of Mines, to determine the most suitable location for a synthetic fuel plant.

WASHINGTON

VEGETABLE OIL PROCESSING FIRM—Tacoma Vegetable Oils, Inc., newly-formed firm, will import and process 36,000 tons of copra annually from the Philippines, with cocoanut oil and meal as its products. Its plant, representing an investment of more than $500,000, will be located in the Northern Pacific's Eureka (McCormick) Dock, with offices at 535 Dock St.

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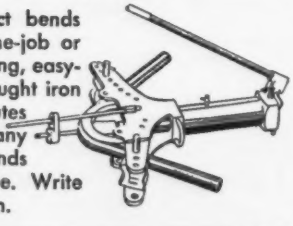

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THE WEST ON ITS WAY

NEW SHIP LINE—Alaska Ship Lines, Inc., is a new Tacoma company, recently formed to operate between Tacoma and Haines, Alaska. Asa Lothrop, the firm's first ship, is now carrying government cargo, but the company plans to expand operations to handle freight in van trailers.

NEW ENGINEERING FIRM—Stephen M. Batori, Seattle consulting engineer, forms Stephen Batori & Company, engineers and consultants, with offices at 200 James St., Seattle. The new firm will offer a wide variety of engineering services to business and industry. They include: investigations and reports, coordination of engineering, plant and procedure improvement, factory layout and design, equipment testing, and power development.

BETHLEHEM STEEL EXPANDS—Bethlehem Pacific Coast Steel Corp. purchases about eight acres of land at 8531 Marginal Way, Seattle, where they will immediately build a structural steel fabricating shop. The new plant is expected to be ready for operation around April 1, 1950.

SUPERPHOSPHATE PLANT—Stauffer Chemical Co. is starting construction of a superphosphate plant at Tacoma, with first production from it scheduled for early 1950. This fertilizer will be made from phosphate rock from Stauffer's properties at Sage, Wyoming, and sulfuric acid from the new plant of the American Smelting & Refining Co., Tacoma.

GOVERNMENT BIDS IN FOOD PROCESSORS—The federal government "bid in" property of Brewster-Pateros Processors, Inc., at Pateros, for $70,000 at a recent auction.

FRUIT WAREHOUSE BURNS—Losses estimated at $750,000 were suffered by Cashmere Fruit Growers Union, Cashmere, recently, when fire swept the plant.

POWER PROJECT APPROVED—Federal Power Commission has authorized the Oakdale and San Joaquin Irrigation Districts to build and operate an $8,840,000 power project on the middle fork of the Stanislaus River in California.

UAL TAKES STRATOCRUISERS—United Air Lines has taken delivery of the first of seven stratocruisers from Boeing Airplane Co., Seattle. These planes will be put on the run between California and Hawaii next January.

PAPER MILL EXPANDS—Puget Sound Pulp & Timber Co. plan to produce chemi-bleached sulphite pulp by next summer in their new plant, now under construction at a cost estimated at $1,250,000 in Bellingham.

NORTHWEST AIRLINES EXPANDS—by starting service from Seattle to Honolulu on Nov 5, using Boeing Stratocruisers. They are also investing $500,000 in plant expansions at the Seattle-Tacoma airport.

MEAT PACKER LOCATES—in Seattle on Nov. 1. Kingan & Co., Indianapolis firm, will use property leased from Olympic Sausage Co. to manufacture meat products.

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WESTERNERS AT WORK

Arizona

A. H. Forman, Jr., former Mississippi utility official, appointed assistant to the president of the Central Arizona Light and Power Co.

Sidney Rogers becomes superintendent of Santa Fe Railway's Albuquerque Division, with headquarters at Winslow, Arizona. Rogers was formerly assistant superintendent at Needles, and is succeeded in that post by **R. M. Champion**, who has been with the company since 1918.

Arthur J. Smith, Jr.

Arthur J. Smith, Jr., named director of placement for the American Institute of Foreign Trade at Thunderbird Field, near Phoenix.

Walter Waidler succeeds **Wendell T. Brown** as superintendent of American Smelting and Refining Company's Trench mine near Patagonia, Arizona. Brown has gone to South America to do ore buying for the company.

California

Clarence Hansen promoted to position of acting superintendent at Oliver United Filters, Oakland, Calif. **James Hoxie**, formerly factory superintendent of the company's Oakland plant, goes to Hazelton, Penna., as assistant plant manager.

B. P. Altick becomes assistant to general manager of Fibreboard Products, San Francisco, on Dec. 1. He returns to San Francisco from Philadelphia, where he has been general manager of Federal Container Co., a Fibreboard subsidiary. **N. M. Brisbois**, vice-president, production, has retired but remains as consultant, and is succeeded by **Robert E. Bundy**, former general manager of operations. **Mark E. Sanford**, former resident manager of Fibreboard's mills at Antioch, replaces Bundy.

Rus Walton becomes manager of the newly-formed advertising and public relations department for Gladding, McBean & Co., Los Angeles.

Raymond D. Shelton is the new superintendent of Santa Fe Railway's Valley Division, headquarters Fresno, succeeding the late **E. B. Hebert**.

Frank Miles elected vice-president and manager of the supply division of Garrett Corporation, Los Angeles. **Lloyd I. Williams**, former manager, transferred to the corporation staff as assistant to the president. **Murray S. Geluber**, secretary, named vice-president in charge of production for the Airesearch Manufacturing Co. division; **Edward A. Bellande** becomes vice-president.

John H. Hanna

Richard A. Claussen

John H. Hanna, formerly with Douglas Aircraft Company and the Bechtel Corporation, appointed manager of Pioneer Rubber Mills' engineering department at Pittsburg, Calif., and **Richard A. Claussen** becomes technical superintendent of that plant.

J. N. Jones named electrical superintendent for the Pacific Coast District, Westinghouse Electric Corporation, with headquarters in San Francisco. Jones has been connected with Westinghouse since 1936, in the company's Pennsylvania and Los Angeles offices.

Roy C. Menzel promoted to position of secretary and treasurer of General Metals Corporation, with full charge of the corporation's financial affairs at the Oakland plant.

Paul A. Best appointed assistant to the president of California Oil Co., subsidiary of Standard Oil Co. of California.

William G. King, Jr., becomes vice-president and general sales manager of Richfield Oil Co. He was formerly assistant general sales manager, and succeeds the late **William T. Dinkins**.

Marvin S. Bandoli

Marvin S. Bandoli appointed to fill the newly-created post of vice - president in charge of sales and distribution at Clary Multiplier Corporation, San Gabriel, Calif. Bandoli was formerly with Victor Adding Machine Co. of Chicago as vice-president in charge of distribution.

H. J. Lilleston

H. J. Lilleston, vice-president of The Paraffine Companies, Inc., has returned to San Francisco after several years with company's New York branch. His new position involves supervising and coordinating the marketing, advertising and merchandising of all Pabco products sold in Paraffine's Domestic Division.

William H. Beekhuis elected a vice-president of Standard Oil Co. of California. He formerly held the positions of assistant comptroller and secretary of the executive committee.

J. E. Templeton heads the new Los Angeles branch of P. R. Mallory & Co., Inc., Indianapolis, located at 1338 S Lorena St. The company are manufacturers of electronic, electrical and metallurgical products.

D. S. Pribyl

D. S. Pribyl promoted to manager of H. J. Heinz Company's Tracy, California, factory succeeding the late V. W. Rothe. Pribyl, who has been with Heinz since 1937, was formerly manager of engineering at the company's Berkeley factory.

Bryce W. Simpson named controller of Standard Gypsum Co. of California at Oakland. **C. M. Eshelman** succeeds him as office manager of Standard's Long Beach accounting offices.

Bethlehem Pacific Coast Steel Corporation's Los Angeles plant has three new superintendents in their operating department. They are: **Frank Alexander**, superintendent of labor and transportation; **C. C. Brandt**, superintendent in charge of mechanical and electrical maintenance, and **Frank Farrell**, superintendent of open hearths.

R. C. Sebold, director of engineering at Consolidated Vultee Aircraft Corp., San Diego, elected a vice-pres. of the company.

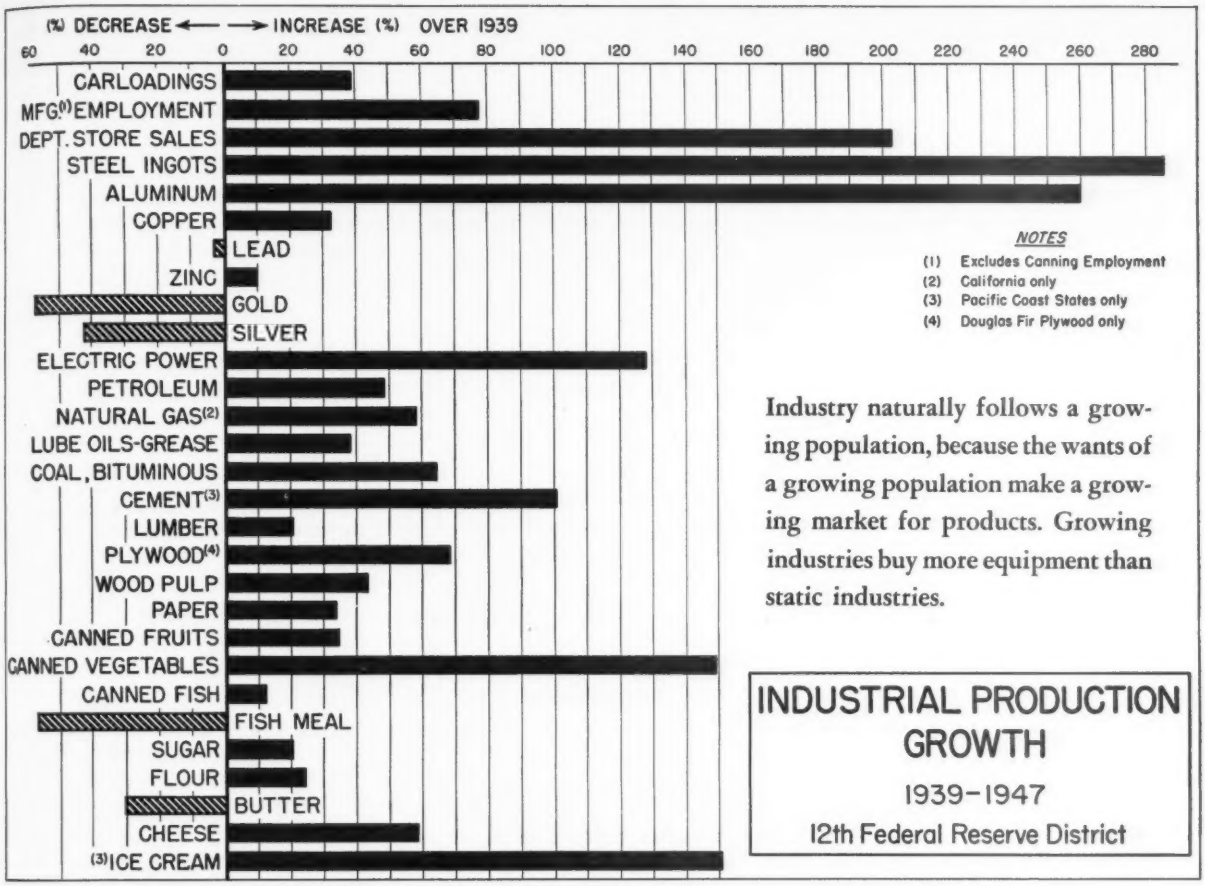
Dr. N. W. Snyder joins the staff of Santa Fe Tank & Tower Co., Los Angeles, as chief technical consultant. Dr. Snyder is assistant professor of mechanical engineering at the University of California.

James E. Goodenough appointed assistant chairman of the department of applied mechanics at Stanford Research Institute. Goodenough comes to the institute from the G. M. Giannini Corporation of Pasadena, where he was chief of engineering design.

Carroll V. Roseberry goes to Los Angeles as supervisor of the central station division for the Westinghouse Electric Corporation there. He succeeds **Ralph A. Hopkins**, who is retiring after more than 42 years with Westinghouse.

Harold C. Miller, supervising engineer of the Bureau of Mines petroleum field office at San Francisco, named regional director of the bureau's Southwest Region, embracing California and Nevada, and his headquarters will be at San Francisco.

(Continued on page 92)



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(Continued from page 90)

Norris Johnson named president of the consulting firm, Petroleum Technologists, Inc., Montebello, Calif. He was formerly chief physicist in charge of production research at General Petroleum Corp.

T. J. Gates appointed maintenance control engineer at General Petroleum Corporation's Torrance refinery.

Shell Union Oil Corporation acquires all of the assets of its wholly owned operating subsidiary, Shell Oil Company, Inc., liquidating the latter and assuming the name of Shell Oil Company. Under the new set-up, chairman of the board of directors will be George Legh-Jones as at present, chairman of the executive committee will be Alexander Fraser, now president of Shell Union, and the office of president will be filled by H. S. M. Burns, now president of the operating company. Vice presidents of the two companies will retain their titles and positions in the newly named company.

Harry B. Corlett appointed district engineer for American Institute of Steel Construction, Inc., and will make his headquarters in San Francisco. He replaces William H. Popert, resigned.

As a result of organizational changes in California Wire Cloth Co., Colorado Fuel & Iron's Oakland plant, Al Pepetone has taken over the duties of purchasing agent and traffic manager, and, in addition, will be heading all shipping functions and stock controls. Jack Welsh, former chief scheduling clerk at the plant, named plant production manager.

Mack C. Lake appointed consulting engineer for the Oliver Iron Mining Company and other U. S. Steel Corporation subsidiaries. He will close his office at 111 Sutter Street, San Francisco, and make his headquarters at Oliver Iron Mining Company, Duluth, Minnesota.

William R. Barber elected technical director of the new laboratory of the Western Waxed Paper Company division of Crown Zellerbach Corp., located at San Leandro. G. D. King promoted to position of manager of new products development with headquarters in the San Francisco sales office.

Bryce W. Simpson announced as controller of Standard Gypsum Company of California, with office in the Kaiser Building, Oakland. Replacing Simpson as office manager of the company's accounting offices at Long Beach is C. W. Eshelman.

James Mitchell named director of research for Western Air Line, San Francisco, replacing Harry E. Karst, resigned.

Forrest D. Wallace, formerly an independent management consultant in Los Angeles, and Ewing D. Reilly of New York will staff the new Los Angeles office of McKinsey & Company, management consultants, with others to be added later. Al Werolin, Pacific Coast manager for McKinsey, will have general supervision over the Los Angeles operation.

H. W. Gray, formerly with Tide Water Associated Oil Co., appointed vice-president of Pacific Oil & Gas Development Corp.

Colorado

R. S. Cockle appointed mine superintendent for the Idarado Mining Company, Ouray, Colorado, succeeding George W. Murray, who is now with a firm in the Philippines.

E. B. Herdman appointed manager of personnel of the Denver and Rio Grande Western railroad. He will have authority over all labor and personnel matters, including those formerly assigned to J. E. Kemp, manager of labor relations. Kemp has accepted an appointment to serve on the National Railroad Adjustment board.

Hawaii

E. B. Woodworth, assistant vice-president and general manager, and Herbert E. Gray, president, Barron-Gray Packing Co., elected vice-presidents, Hawaiian Pineapple Co., Ltd.; Mrs. E. Sward, secretary-treasurer, Barron Gray, elected assistant secretary-treasurer, and L. H. Hogue of Barron-Gray elected assistant treasurer.

Montana

J. A. McLean named general mine foreman of the Alps Mining and Milling Company, Bonita, Montana. Clare J. McLean is mill superintendent and Francis A. Hancock is chief engineer.

Nevada

Don C. Cameron elected director of the state uranium school at Carson City.

J. C. Kenner upped from vice-president to president of the Nevada Northern railway, succeeding the late E. T. Stannard.

New Mexico

Howard D. White, executive vice-president, Liquefied Petroleum Gas Association, Chicago, resigns to become one-third owner of the newly organized Perlite Development Corporation at Albuquerque, New Mexico. White will serve as secretary and promotion director of the new company. His associates will be J. V. Slavick, president, and Ray Leyen, sales manager.

Oregon

J. S. Duncan named president-general manager for Oregon Foods, Inc., McMinnville, Oregon; C. C. Wright is the new vice-president and R. L. Simon, secretary-treas.

Jack H. Jones, assistant manager of the Northern Pacific Terminal Company, moves up to position of manager, replacing Harry D. Mudgett, manager, who retires after 48 years of railroad service.

With the dismantlement of the Oregon-Washington Plywood Co., Tacoma, and its removal to Garibaldi, Oregon, Dennis M. Slenning, formerly manager of the Tacoma office, is upped to vice-president, retaining the general sales office at Tacoma. Theodore Nicolai, manager of the Garibaldi plant, advanced to vice-president in charge of production and is to continue in his office in Oregon.

Utah

Frank C. Francis named president of Maple Creek Coal Company; Frank J. Thomas becomes vice-president and James Kichas, secretary-treasurer.

Louis Buchman, general manager of Kennecott Copper Corporation's Utah division, promoted to general manager of all Western mining divisions of the corporation.

Ernest F. Goodner elected president of American Gilsonite Co., succeeding C. F. Hansen, who has been named president of Calmara Oil Co., a South American affiliate of Standard Oil Company of California. Roy E. Nelson becomes assistant to the president.

James W. Wade retires from his position as president and general manager of Tintic Standard Mining Company, Salt Lake City. H. E. Raddatz, former vice-president, is the new president.

Sherman B. Hinckley recently made president and general manager of the Rico Argentine Mining Company, Salt Lake City, to replace C. T. Van Winkle, retiring after seven years as president of the company.

Ben H. Sloan announced as vice-president in charge of sales of Utah Fuel Co. and its subsidiaries. In his new position, Sloan will direct the firm's coal sales.

Washington

A. C. McCamant becomes manager, Seattle North District, General Petroleum Corporation. He succeeds Jack A. Simpson, promoted to assistant division manager in the retail section.

Harry Schrader, Jr., named managing director, succeeding Charles E. Devlin, who has become manager for Simpson Logging Co.

Wyoming

Harry A. Brown, superintendent of Frontier Refining Company's Cheyenne, Wyoming, refinery, promoted to vice-president in charge of manufacturing.

A. E. Higgs becomes superintendent of the Casper refinery of the Texas Company, succeeding Pendleton Beall, retired. E. W. McNealy, now with the process engineering department of the company in New York, will become assistant at Casper.

E. R. Atwill is the newly appointed manager of the Rocky Mountain Division of Union Oil Company, with headquarters in Laramie, Wyoming. He replaces Max Krueger, who is resigning on November 15.

Associations Elect

Jack F. May, general manager of Lundin & May Foundry Co., Inc., Salt Lake City, is chairman of a new Salt Lake group of the Gray Iron Founders' Society. Other members are Sid McKenzie, Western Foundry & Repair Works, Salt Lake City; J. N. Carter, works manager, American Foundry & Machine Company, Salt Lake City; James Silver, president, Ogden Iron Works, Ogden; E. H. Backman, partner, Backman Foundry, Provo.

Henry W. Bigge of Oakland re-elected president of the California Motor Transport Associations, Inc., Los Angeles at the annual meeting in Los Angeles. W. J. Fortier of Fresno re-elected treasurer; A. D. Paxton of San Marino, secretary. Vice presidents elected were Neil Curry for Southern California and J. P. Spaenhower for Northern California.

The Purchasing Agents' Association of Northern California, Inc., at their annual meeting in San Francisco elected Arthur J. Melka, Hydraulic Dredging Co., Ltd., Oakland, president; H. W. Christensen, Columbia Steel Co., first vice president; H. R. Morrison, Union Oil Co. of California, second vice president; secretary, R. J. Henderson, The American Rubber Manufacturing Co.; treasurer, B. E. Gobel, Consolidated Western Steel Corporation.

The new Administrative Committee of California Oil Producers, Los Angeles, consists of **Bruce H. Robinson**, General Petroleum Corp., chairman; **Chester F. Dolley**, Atlantic Oil Company; **H. G. Henderson**, Severns Drilling Company, Ltd.; **William L. Hobro**, Shell Oil Company, Inc.; **Lloyd Williamson**, Lakeport Petroleum Company. The Committee's new Engineering Board consists of **C. W. Stephens**, The Ohio Oil Company, chairman; **E. A. Galvin**, Western Gulf Oil Company; **C. F. Gates**, General Petroleum Corporation; **Wayne Glenn**, Continental Oil Company; **O. A. Graybeal**, Barnsdall Oil Company; **Joseph Jensen**, Tide Water Associated Oil Company; **J. M. McNeill**, Union Oil Company of California; **M. T. Miller**, Standard Oil Company of California; **L. R. Rogers**, The Superior Oil Company; and **E. R. Smith**, Seaboard Oil Company of Delaware.

O. P. Chisholm of Helena elected president of the Mining Association of Montana. **R. B. Caswell**, Dillon, elected first vice president and **Charles R. Brazier**, Helena, second vice president.

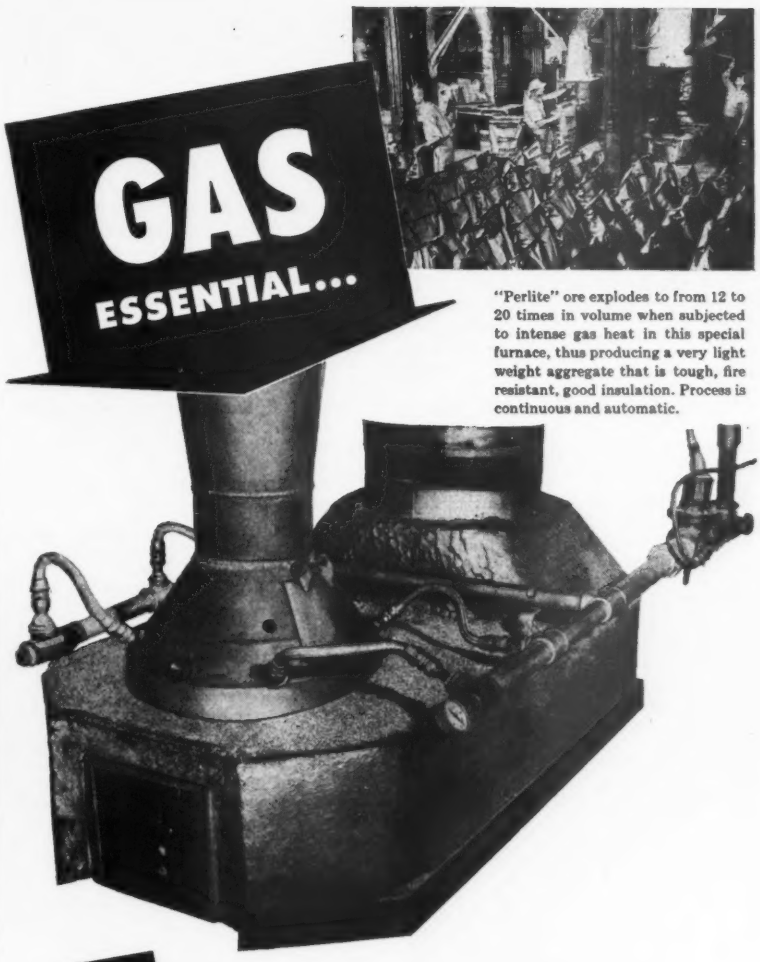
• Above: This picture, taken at the Pacific Coast Gas Association convention held in Santa Barbara, Calif., Sept. 7, 8 and 9, shows (left to right) Clifford Johnstone, L. A., former managing director of the Association; George W. Smith (standing) general chairman of this convention; Arthur Bridge, president of Southern Counties Gas Co., L. A., former president; N. Henry Gellert, president of Seattle Gas Company, newly-elected president. E. G. Lawson, president of Pacific Public Service Co., San Francisco, replaces Gellert as vice-president, and D. G. Martin, general auditor of Pacific Gas & Electric Co., San Francisco, retains the post of treasurer.

North Pacific Millers Association: President, H. W. Caylor, Centennial Mills, Seattle; vice-president, J. S. Davis, Fisher Flouring Mills, Seattle; secretary, W. R. Debus, Terminal Mills, Portland.

Washington Employers, Inc.: H. D. Hailey, president; Phil Bannan and W. S. Greathouse, vice-presidents; Darrah Corbet, secretary-treasurer.

Controllers Institute of America: President, William Herbert Carr, vice-president and treasurer of California Packing Corp.; Edwin E. Balling, Jr., of Latchford-Marble Glass Co., Los Angeles, elected Pacific Coast region vice-president.

National Scrap Iron & Steel Institute: Albert Levinson, president, General Pipe & Supply Co., Los Angeles, named chairman, public relations committee.



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American Perlite Corporation, Richmond, Calif., utilizes gas fuel for the steady 2300° F. heat required to process the new lightweight aggregate—"Panacalite"—used in plastering.

Officials praise advantages of gas in simplifying furnace design and maintaining needed, close temperature-control. Result: a cleaner, more uniform product, at low cost.

Essential fuel to growing Western industry, gas has advantages you, too, can utilize. Call on your gas company's industrial engineers for friendly counsel, practical help.

For profitable production, use... GAS

PACIFIC COAST GAS ASSOCIATION

Western TRADE WINDS

News about those who distribute and sell industrial equipment and materials

L. H. Chailie, formerly director of public relations for Fruehauf Trailer Company, Los Angeles, becomes Fruehauf's regional manager, to supervise and administer the firm's 16 factory branches in the Western division.

Murray Owen, formerly with General Electric Company, named general sales manager of Western Insulated Wire Co., Los Angeles.

Arthur D. Bragg named Pacific district manager of General Electric's Apparatus Department, succeeding **Allen G. Jones,** who retires Oct. 1.

John A. DeGroot, formerly of Westinghouse Electric Corp.'s Pittsburgh, Penna., plant, transferred to San Francisco as assistant to the company's Pacific Coast district manager. **W. J. Howell,** whom DeGroot succeeds, goes to Pittsburgh as apparatus sales manager.

Walter J. Maytham, Jr.

Walter J. Maytham, Jr., formerly of Chicago, appointed Pacific Coast district manager for Westinghouse Electric Corporation at San Francisco. He heads company's sales activities in Washington, Oregon, California, Idaho, Nevada, Utah, parts of Montana, Wyoming, Arizona, and Alaska and Hawaii. He succeeds **Chas. A. Dostal,** vice-pres., who retires next May.

Henry H. Falkner becomes branch manager for Westinghouse Electric Supply Co.'s store at Boise, succeeding **A. B. Darby,** transferred to the company's Los Angeles offices. Falkner was formerly with the firm in Utah, first in Provo and then at Salt Lake City.

T. R. Colville appointed advertising manager of the pump division of Byron Jackson Co., Los Angeles.

Secord Sales Company, Seattle, appointed stocking dealers for the Metzgar Company's line of power boosters and gravity roller and skate wheel conveyors. Territory served is Western Washington.

Paul R. Brousse appointed Western zone manager for Western Electric's distribution organization. He succeeds **C. H. Hanson,** recently named manager of the firm's Tonawanda, New York plant.

Hugh Sheeter will be the Los Angeles representative and **L. M. Baxter Co.** will represent the San Francisco, Portland and Seattle areas for Revere Electric Manufacturing Co., Chicago. The company is opening a San Francisco warehouse to stock their lighting equipment for service stations, airports, sports, industrial and marine requirements.

Ozalid Division of General Aniline & Film Corp. has moved to a modern office and warehouse at 1001 N. Brea, Los Angeles, which will contain new facilities to display the Ozalid printmaking machines and dry-process reproduction materials.

Robert R. Reese appointed Western sales manager of American Anode, Inc., at Los Angeles, Calif. He succeeds **R. A. Lees,** who goes to the company's main offices in Akron, Ohio, to become manager of research and development.

Frank B. Tipton has joined the staff of Edward D. Maltby Co., Los Angeles, as a sales engineer. The company are factory representatives for leading bearings and other power transmission equipment manufacturers.

Louis S. Petersen of Cincinnati, Ohio, is the new district sales manager in Denver for Procter & Gamble Co. He replaces **Paul D. Covey,** named general manager of one of the soap firm's subsidiaries in Soerabaja, Java.

Valley Industrial Supply Co., Ontario, Calif., appointed dealer for Allis-Chalmers motors and controls in San Bernardino and Riverside counties. **Rogue River Hardware,** Grants Pass, Oregon, will serve as dealer for Allis-Chalmers motors, controls and centrifugal pumps in Josephine, Jackson, Douglas and Curry counties.

Bert Van Cleve, manager of Olive Advisory Board, San Francisco, recently resigned to become salesmanager of La Mirada Olive Co. at Corning. Van Cleve's headquarters will be at La Mirada's sales office at 116 New Montgomery Street, San Francisco.

Norwes Company, Seattle, become sales representatives in the Northwest territory for Wilkerson Valve, Inc., manufacturers of automatic moisture removing valves for air lines, air tanks and air brakes.

T. Max Stanger has joined the sales staff of American Wheelabrator and Equipment Corp., Mishawaka, Indiana. He will have his headquarters in Salt Lake City, where the company has not previously had a sales office.

Douglas Wilkings, formerly vice-president and general manager of the New Plastic Corporation, appointed division sales manager of the Granberg Corporation at Los Angeles, where the company has just opened a factory branch office and warehouse at 2700 So. Santa Fe Ave. Wilkings will be in charge of sales and service of Granco products throughout the Southern California and Arizona trading area.

W. M. Griffith named by The National Supply Company, Superior Engine Division, as district manager of the southern area, Pacific Coast territory, with headquarters at Torrance, California.

Anaconda Wire & Cable Company's new Seattle office is located at 1338 - 4th Avenue.

L. M. Guibara appointed Pacific Coast division sales manager for United States Rubber Company, with headquarters in Los Angeles. He will be in charge of branch sales in Los Angeles, San Francisco, Portland, Seattle, and Salt Lake City.

Wilwite Associates, manufacturers' representatives for sanitary and cleaning supplies, have moved into larger quarters at 610 Sixteenth Street, Oakland, Calif.

A. C. McCamant appointed manager of General Petroleum Corp.'s Seattle north district, which includes the Seattle, Kirkland, Everett, Mount Vernon, and Bellingham areas. He succeeds the former Seattle district manager, **Jack A. Simpson,** who has been promoted to the position of assistant division manager.

Marshall Industrial Supply Corporation, 9040 West Washington Boulevard, Culver City, recently opened to become distributors of machine shop tools and production equipment. They are an affiliate of Marshall Tool & Supply Corporation, Los Angeles, and make the third outlet opened to distribute the firm's products in the Southern California area.

Allen R. Newmark named manager of San Francisco division, Zellerbach Paper Company, succeeding **Thomas A. Leddy,** who becomes manager of the printing paper merchandising department of the headquarters staff.

H. J. Brosnahan named district manager, Spokane general sales and motor truck district, International Harvester Company. **J. P. Williams,** his predecessor, has been transferred to the Denver sales district of the company.

Chester C. McMillan

Chester C. McMillan announced as chief sales engineer of the Chemical Division of the Portland Shingle Company, Portland. In the new position, McMillan will be responsible for development, sales and manufacture of a new scale, corrosion, pitting and foaming preventative for boilers, trade-marked "Borgana."

Sharp and Dohme Inc., Philadelphia, pharmaceutical distributors, have chosen **Gordon R. Klodt,** formerly of Salt Lake City, as their Los Angeles sales supervisor.

Flint Distributing Co., 316 W. 2nd S., Salt Lake City, will handle the distribution for the intermountain area of R.C.A. radio television, accessory products and records.

Henger-Seltzer Co., Los Angeles, appointed West Coast sales distributor for products manufactured by Fansteel Metallurgical Corp., North Chicago, Ill., and its subsidiary, Weiger Weed & Co., Detroit.

Matthew G. O'Connor becomes head of the Western plastics sales forces for Celanese Corporation, replacing **Samuel W. Murray,** who goes east to take over the district managership of the company's New England territory.

Edward E. Muhs, formerly sales representative of Spreckels Sugar Co., appointed sales promotion manager for Leslie Salt Co., with San Francisco headquarters.

Douglas Jones becomes Salt Lake City district manager for the Chain Belt Co., Milwaukee, to operate as the Douglas Jones Co.

Industrial Supply Co., Inc., appointed distributor for Nelson Stud Welding Division of Morton Gregory Corp., Lorain, Ohio. Industrial Supply will handle the company's welding equipment in Utah, Montana and parts of Idaho, Wyoming and Nevada.

Kieley & Mueller, Inc., announce appointment of three new sales representatives to handle distribution of the firm's industrial control valves from the Southwest to Oregon. **W. J. Beckett Company,** 108 W. 6th Street in Los Angeles, will handle Southern California sales, including Arizona. The Northern California and Nevada territory will be handled by **Hugh Rodman,** 270 Fremont Street, San Francisco. Northwest Pacific area is represented by **Farnes & Martig, Inc.,** 417 N.E. Couch Street, Portland, with a branch at 422 Smith Tower, Seattle. This territory includes all of the states of Oregon and Washington, and West of the eastern boundaries of the Idaho counties of Clearwater, Boise, Bonner, Idaho, Elmore, Shoshone, Valley and Owyhee. Heads of this organization are **Bert W. Farnes** and **Robert W. Martig,** both of whom operate from the Portland office.

Dalco Appliance Company, 685 Seventh Street, San Francisco, appointed Northern California distributor of Philco products, and will carry Philco's complete line, including radios, television sets, refrigerators, freezers, air conditioners, parts and accessories.

James F. Crough appointed Western representative for The Hydraulic Press Manufacturing Company, Mount Gilead, Ohio, to handle its line of hydraulic pumps, fluid motors, valves, controls and power units for both marine and industrial applications. His headquarters will be at 607 Market St., San Francisco.

James F. Crough

George Berg, formerly of Beall Pipe and Tank Corporation, and **A. A. Honeyman** have become partners in the Honeyman Manufacturing Company. Honeyman has charge of manufacturing and Beall has the merchandising of lightweight hand trucks and the "Rol-Way," a carrier designed for handling large pieces of flat material such as sheet metal, plate glass, plywood, plasterboard, pipe and tubing.

When **Campbell Hardware and Supply Company** recently opened their new plant at 3433 Airport Way in Seattle, they sponsored an Industrial Tool and Equipment Show, the first of its kind in Seattle. Among the exhibitors were: Aro Equipment Corporation, Pneumatic Tool Division; Chisholm-Moore Hoist Corporation; Dayton Rubber Co., Mechanical Division; Hewitt Rubber Division, Hewitt-Robins, Inc.; The Ridge Tool Co.; Stanley Works, Electric Tool Division.

Henry R. Hansen announced as sales representative for Bliss & Laughlin, Inc., to represent them in the states of Colorado, Montana, Wyoming, Utah, New Mexico and a part of Nabraska. Hansen, who succeeds W. C. Judy, deceased, will make his headquarters in the Rocky Mountain Warehouse Building, 1863 Wazee Street, Denver 2, Colo.

Ducommun Metals & Supply Co., Los Angeles, have appointed three new salesmen to work on "outside" sales in the Los Angeles territory. The men are **Chester Johnson, Carroll Dege** and **Richard Snow,** all of whom have had extensive experience in stockroom, warehouse, pricing and telephone sales; Dege has been with the firm 14 years and Johnson and Snow, four years.

Jack J. Kolberg Company, Seattle manufacturers' representatives, appointed sales representatives for Cleveland Republic Tool Company's line of air hydraulic industrial tools for drilling, riveting, counterboring and chamfering. They will serve the territory of Washington, Oregon and Idaho.

The Dayton Rubber Company, Dayton, Ohio, have made the following appointments: **Charles Glaspell,** Seattle, appointed as Northwest sales representative for the industrial division; **M. Stuart Brecka** appointed district sales representative, with main office at San Francisco, 476 Golden Gate Avenue. Brecka, who was formerly with General Electric, will handle the northern California territory, while Glaspell handles British Columbia, Washington, Oregon, Idaho and part of Montana.

"Gene" Jund, for many years a Pabco paint salesman in the Northwest, is now the independent operator of the new "Pabco Paint Mart" in Seattle. The new outlet is an important addition to the over-all system of independently-owned "Pabco Paint Mart" warehouses being franchised by The Paraffine Companies, Inc., and will service retail Pabco Paint stores in the entire Seattle area. Assisting Jund as superintendent of the warehouse will be **Clyde Henderson,** also a former Pabco man, with over 21 years' paint experience in Paraffine's Seattle office.

C. K. Lenz elected president and sales manager of Kennecott Sales Corporation to succeed **C. T. Ulrich,** recently appointed chief executive officer of Kennecott Copper Corp., the parent company. **S. S. Jackson** elected a vice-president and **H. E. Westlake,** a vice-president and assistant sales manager.

Bruce Engineering Corporation has been recently formed to produce specialized marking and handling equipment for food packing plants, breweries, oil companies and other packaging industries. The firm's two offices are at 417 Montgomery Street, San Francisco, and 117 East Colorado Street, Pasadena. Production and sales of its equipment will be handled by three of the company's officials, **Frank G. Chambers, Charles A. Anderson** and **Robert L. Chambers,** who are also executives of the Magna Engineering Corporation. **John K. Bruce,** head of the new firm, is the inventor of the automatic pallet loader, now licensed to Lamson Corporation (see June, 1949, *Western Industry*).

Gaer, Florance & Associates, 2052 Humboldt Street, Denver, appointed agents for Federal Electric Products Company of Newark, N. J., manufacturers of power and light control equipment. As representatives for Federal, they will serve the territory of Colorado and Wyoming, Utah, north of the southern boundariesof Millard, Sevier, Emery and Grand counties and parts of New Mexico. **Shaffer and Nelson, Inc.,** at 411 Weatherly Bldg., Portland, Oregon, and 312 Occidental Ave., Seattle, Washington, are appointed official agents for Federal's products in the Northwest territory, which will take in Idaho, Oregon, Washington and also parts of Montana, Canada and Alaska.

Two new Western Allis-Chalmers general machinery division dealers are the **Northland Machinery Co.,** Sidney, Montana, for the company's centrifugal pumps and Texrope drive equipment, and the **Strom Electric,** Troy, Idaho, for motors, controls and centrifugal pumps. Newly named service shop for the company's motors, controls and transformers in Cochise county is the **Copper Electric Co.** in Bisbee, Arizona. Copper Electric's president is C. W. Morris, and W. H. Clark is in charge of their service work.

Van M. Ohnick has recently joined Uarco, Inc.'s Continuous Forms Division, to serve the company's customers in the Seattle territory. Ohnick is a recent graduate of the University of Washington.

L. R. Bigler appointed manager, specialty sales division, Griffith Rubber Mills, Portland. The company have recently spent over a quarter of a million dollars on modernization of plant facilities and purchase of new equipment to improve facilities for the manufacture of roll covering for the paper industry. The specialty sales division manufactures marine products and rubber tile for home and commercial use.

L. F. Casley appointed manager, Montgomery Elevator Company branch office at Portland. Casley, who was formerly national accounts manager in the Montgomery Chicago branch office, assumes his new duties in Portland on October 1.

H. A. Price joins the sales engineering force of The Rucker Company, 4228 Hollis Street, Oakland, as sales engineer for the Oakland-Sacramento area. The company specializes in the design and manufacture of industrial fluid power units and systems.

W. C. Kennedy

W. C. Kennedy becomes general sales manager of Airquipment Company and Aerol Co., Inc., subsidaries of Lockheed Aircraft Corporation. Kennedy was previously assistant general manager of the Wheel and Rim Sales Company of Toledo and Pittsburgh, one of Airquipment's main distributors.

The Thermal Engineering Co., Salt Lake City, will become representatives for Allis-Chalmers centrifugal pumps in Utah, in Idaho south of and including Adams, Valley and Lemhi counties, and in Baker and Malheur counties in Oregon. **Willamette Tractor Co.,** Albany, Oregon, have been named dealers for the same line in Linn, Marion, Benton and Polk counties in Oregon.

Jack Brewer, manufacturers' representative at 1060 South Broadway, Los Angeles, becomes exclusive representative for the Whiton Machine Company, New London, Conn., on the sale of their lathe chucks, centering machines, special purpose high production milling machines and gear cutting machines in southern California.

Ronald B. Hayes, formerly associated with Spreckels Sugar Company as advertising and merchandising manager, joins International Minerals & Chemical Corporation to promote the sale of Accent, the company's brand of monosodium glutamate. He will work with consumer and trade groups in California, Washington and Oregon.

Owens-Corning Fiberglas Corporation has made the following changes and promotions: **Elston D. Herren,** former assistant to the sales manager, Pacific Coast Division, becomes assistant sales manager; **D. R. Dyas,** former Los Angeles branch manager, becomes sales manager for textile products, with headquarters in Los Angeles; **Erven White** of the company's Los Angeles sales staff, becomes sales engineer, Pacific Coast Division, for plastics and industrial fabrics, to cover eleven Western states, with headquarters in Los Angeles; **Dick Strauss** becomes Los Angeles branch manager.

S

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LEAD WIRE • EQUIPMENT • SILICONES
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Industries Cooperate to Lessen Stream Pollution

Among the recent efforts toward lessening stream pollution reported by the Washington State Pollution Control Commission are the following:

Fish Canneries

Crab packing plants and other shellfish canneries in the vicinity of Grays Harbor and Willapa Bay. Arrangements made with several rendering plants to collect discarded portions of crabs and use in fertilizer manufacture, instead of dumping into the water. Involves some changes in operation of crab packing plants, but compliance with recommendations favorable. Rendering plants will also collect discarded portions of dog fish. Keystone Packing Company, Ilwaco, agreed to discontinue dumping fish offal in Columbia River and to increase refrigeration storage to preserve the material until enough on hand to sell.

Meat Packing

Arrangements made in numerous plants for separate collection of blood, paunch manure and grease, and screening of waste, resulting in elimination of 80 to 85 per cent of polluted materials from the waste in many plants. Recommended installation of self-cleaning grease trap and septic tank for wastes from new plant at Centralia.

Rendering Plants

Helm Rendering Works, Ferndale, new location, very little likelihood of odor nuisance. Dry rendering process used, quantity of waste small, recommended providing septic tank and drain field for this waste instead of dumping into Anderson Creek. Puget Sound Rendering Works, Tacoma, agreed that waste entering Leach Creek would be discharged on large field and plowed under as fertilizer.

Fruit and Vegetable Canneries

Pictsweet Frozen Foods Company plant, Lynden, all waste waters collected in a sump, pumped to an improvised lagoon in middle of large field, apparently satisfactory method of disposal. At Pictsweet's Waitsburg plant, waste water is discharged to lagoon and treated with sodium nitrate for odor control. Waste is pumped to 10-acre plot where it is absorbed.

R. D. Bodle Company, Seattle, installed shaker screen for water before it is discharged, also plans made to reuse portion of the water in order to reduce the volume of waste. Kale Canning Company, Everson, numerous complaints of discoloration of river from waste from canning red beets. Recommended land should be ponded to remove it entirely from the stream.

Hyland-Stanford Corporation, Grandview, screen approved. Blue Mountain Cannery, Dayton, waste being screened before discharge to sewer. California Packing Corporation, Toppenish. Process water screened through 40-mesh shaker screens, silage for cattle feeding made from solids taken from screens. Possibility of lagooning process wastes and discharging cooling water to storm sewer to relieve heavy loading of proposed municipal sewage treatment plant.

Pulp Mills

Surveys made at Rayonier, Inc. at Hoquiam and Shelton. At latter mill about 98 per cent of 400,000 gallons of sulphite waste liquor being disposed of by evaporation and burning. Some of the high concentrations of sulphite waste liquor found in vicinity of mill due to leakage of storage tanks and pipe lines. Company took steps to dry up area to prevent further leaking of the liquor into bay. Pulp mills have agreed to furnish complete report on progress on sulphite waste liquor disposal and on plans for eventual solution of each mill's problem. In case of new pulp mill to be built at Anacortes using a new process of sulphite pulp production, proposed to impound waste from new mill and Coos Bay Pulp Mill and controlled discharge of combined waste into Guemese Channel. Approximately $280,000 subscribed by the industry for research work done at University of Washington.

Other Wood-Working Plants

Washington Wood Products, Everett. Blower pipe installed to carry sawdust across the waterway to a small island. Barbee Mill Company, Kennydale, requested changing channel of May Creek to eliminate sawdust pollution by high water. Simpson Logging Company installed Saveall at Shelton to prevent fiber loss, but has not operated as efficiently as expected. Company endeavoring to obtain efficient removal of fibres.

Tubyfor Mill at Morton using most modern type of burner screen available, and will make any recommended

changes in equipment recommended to eliminate sawdust pollution. At Ridgefield Shingle Company, sawdust blower entered burner at high elevation, which allowed incomplete burning and loss of sawdust. Changes recommended in burner installation. Electric Mill Company agreed to burn as much of its sawdust as possible, and prevent it entering Cowlitz River near Mossyrock.

Oil Waste

Chicago, Milwaukee, St. Paul and Pacific Railroad, Tacoma, installed oil separator, apparently working satisfactorily. Arrangements made for discharging waste detergent liquor so as not to cause undesirable conditions in waterways. Tidewater Associated Oil Company requested to provide facilities for preventing oil spillage from tankers in Lake Union. Recommended to Standard Oil Company at Houghton to install oil separator to prevent accidental spills. Olympia Wood Preserving Company, Olympia, agreed to burn oil and sludge from an old creosote deposit stirred up by dredging operations. Pacific Car and Foundry Company, Renton, agree to check oil skimming device, which had not been operating properly.

Tacoma Flats

Carstens Packing Company wastes will be treated in proposed Tacoma sewage treatment. Hooker and Pennsalt reports coming up.

Dairies

Sumas Dairy. Buttermilk evaporated, but butter washings go into sewer, and considerable waste from dry milk operations discharged as waste. Recommended first butter washings should be combined with buttermilk and evaporated, and in drying plant more attention should be given to collection of milk solids from floors and equipment. Weiks Dairy, Littlerock, milk bottling plant and chicken slaughter house. All possible wastes recovered and sold or used as fertilizer. All process waters and sanitary sewage treated by means of septic tanks and drainage fields. At Issaquah Creamery recommended installing weir box on creamery line to determine amount of overloading of Issaquah sewage treatment plant.

Oregon State Sanitary Authority orders Crown Zellerbach Corporation, with mills at Lebanon and West Linn; Publishers Paper Company with mill at Oregon City; Oregon Pulp & Paper Co. at Salem; and Spaulding Pulp & Paper Co., with mill at Newberg, to cease contributing to stream pollution by Dec. 31, 1951. Among possible remedies are evaporation layout, very costly; producing "fodder yeast" (protein cattle foods) out of the waste liquor (German and Swedish mills have shut down this operation, because unable to compete with other products); changing liquor base to eliminate the acid, as Weyerhaeuser and Rayonier have done; expand rate of production, so as to run only nine months, and discharging impounded liquid after low-water period passes.

Rules and Regulations for Oil Pollution Control

RULES and regulations for the control of oil pollution have been set up by the Washington Pollution Control Commission. Failure to carry them out will be considered a wilful violation of the state's pollution control act. They are as follows:

SHIPS, CARGO AND PASSENGER

(a) Bilge or ballast water, waste or other material containing oil in any amount whatever shall not be dumped or otherwise allowed to discharge from cargo or passenger ships into the waters of the state.

(b) When loading oil, ship-to-wharf connections shall be such as to prevent leakage and the discharge of oil into the waters. Every precaution shall be taken to prevent accidental spills from either ship or shore facilities and to hold and recover such spills as may occur.

OIL TRANSPORTATION EQUIPMENT

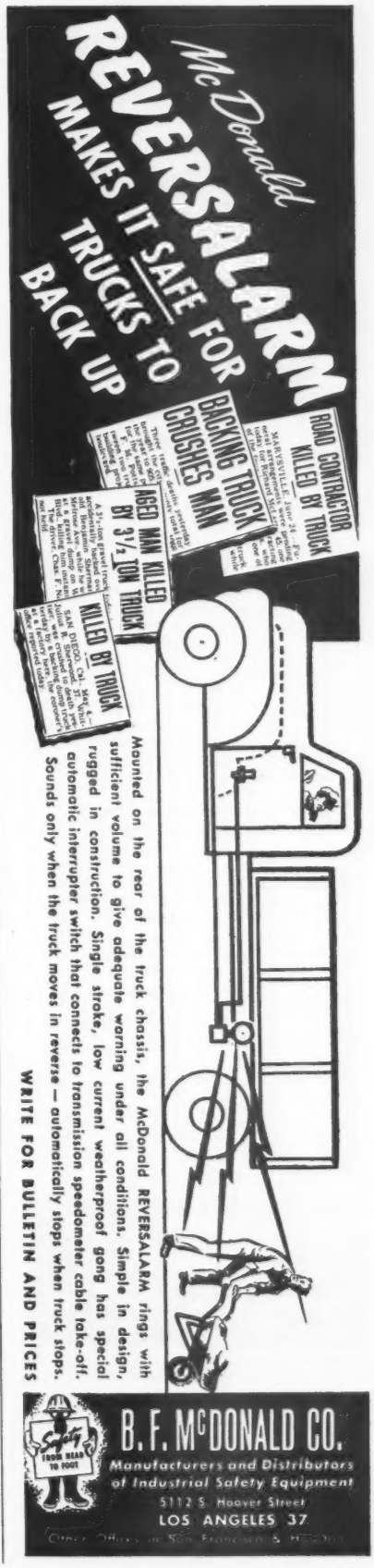
(a) Tankers, railroad tank cars, tank trucks or other facilities used for the loading, unloading, and transportation of oil shall be equipped for the collection of the drip from hose or other connections and the excess oil contained in hose and pipe lines, wherever there is a possibility that this oil will find its way either directly or indirectly into a body of water. Provision shall also be made for catching accidental spills and these facilities shall be of such a capacity as to hold the maximum quantity of oil possible from any one spill.

(b) Roundhouses shall be provided for the collection of all oil and oil-and-water mixtures and an adequate separator shall be installed for the separation and recovery of both light and heavy oils from these mixtures. These separators shall be operated in such a manner as to assure maximum efficiency.

INDUSTRY

Wherever practical, all waste oils and lubricants from industrial operations

(Continued on next page)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POLLUTION RULES & REGS.

(Continued from page 97)

should be collected in containers for proper disposal. Oil emulsions used for machine cutting and tool cooling should be collected, treated and re-used wherever possible. In event that these emulsions are discarded, the emulsion must be broken and the oil recovered for proper disposal. The general wastes from processes, if they contain oil, must be first passed through an adequate and well operated oil separator before being discharged into the waters of the state (includes coastal harbors, Puget Sound and that portion of the Columbia River within the state).

Service Operations

Service stations with direct outlets to a body of water shall not discard oil to that water or so dispose of it in such a manner that it will be washed into the waters by run-off.

Municipal Sewers

Officials of cities, towns and sewer districts are directly responsible for the control of oil discharged from their respective sewerage systems. It is strongly urged that ordinances be passed which will make it unlawful to dump or otherwise discharge oil into these sewer systems.

Disposal of Oil

Since it is usually desirable to dispose of waste or recovered oil by burning, this should be accomplished with due regard to local or other regulations and without the production of nuisances or hazards. The location of disposal points shall be such as to eliminate any possible pollution of either surface or underground waters.

Immediate Action

Immediate steps shall be taken in case of an accidental spill to prevent the spread of the oil and to remove it from the water surface as completely as possible. (For large spills, booms of logs have been used to keep the oil from spreading. The oil may then be pumped from the water surface. Oil resulting from small spills and that remaining after pumping the larger spill can be removed by the use of old burlap, matting or sawdust. These materials are then burned.)

Reports

In case of an accidental oil spill of an appreciable magnitude, the party responsible shall make a full and complete written report within three days to the Pollution Control Commission. This report shall include the reasons for the accident and the provisions to be taken to prevent its recurrence.

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U.C. Management Institute Convenes at Asilomar

The University of California, whose industrial relations faculty staff have done an excellent job in having labor leaders "go to school" to learn some of the principles and history of industrial relations, has now picked up the management side of the matter, with considerable success. The university's first Summer Management Institute, held at Asilomar in September, drew 100 or more plant managers, foremen, industrial and personnel relations managers, who went through five heavy days of analysis of economics and industrial relations.

Reversing the Stanford Business Conference procedure of taking the morning for speeches by top-flight people of national fame, and then digging into seminar stuff in the afternoon, the Asilomar conference gave its "students" the hard problems in the morning and early afternoon, and let the visiting firemen do their stuff in the evening.

President Robert Gross of Lockheed was the lead-off man, with a penetrating speech on labor relations. President Paul Davies of Food Machinery & Chemical Corporation not only carefully analyzed the future as he saw it but also did the unusual by "casing the joint" a day or two in advance in order to see what kind of a speech was needed. Herb Ryker, vice-president in charge of manufacturing for Lockheed, stayed with the institute from start to finish, and there is every indication that this Asilomar institute will be taken very seriously by industry.

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A National Symposium on Air Pollution will be held at the Huntington Hotel, Pasadena, November 10 and 11. It will be presented by Stanford Research Institute, in cooperation with Caltech, University of California, and USC.

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$3,065,080 Project Approved

The Board of Army Engineers has approved construction of the Shilshole bay project in Seattle, Wash., at an estimated cost of $3,065,080.

INDEX TO ADVERTISERS IN THIS ISSUE

A

Alvey Conveyor Mfg. Co. 75
Alvey-Ferguson Company, The 60
American Brass Company, The ..... 3, 4 & 24
Anaconda Copper Mining Co. & Subs. ..... 3, 4, 12 & 24
Anaconda Wire & Cable Co. 12

B

Baldor Electric Company 82
Boston Woven Hose & Rubber Co. 18
Buda Company, The 22

C

California Barrel Co., Ltd. ..... 2nd Cover
Clark Industrial Truck Division, Clark Equipment Co. 15
Clipper Belt Lacer Co. 88
Cold Metal Products Co., The ..... 3rd Cover
Coldwell, Banker & Company 88
Colorado Fuel & Iron Corporation, Realock Fence Division 89
Columbia Steel Company 11
Crane Co. 8
Curtis Pneumatic Mach. Div. of Curtis Mfg. Co. 65

D

Degen Belting Co. 87
Dow Corning Corporation 29

E

Electrolift, Inc. 84
Eutectic Welding Alloys Corp. 98

G

General Petroleum Corporation ..... 6 & 7
Gladding, McBean & Company 73

J

Johnston, A. P., Company 100
Jorgensen, Earle M., Co. 14

K

Kaiser Steel Corporation 63

L

Lubriplate Division, Fiske Bros. Refining Co. 87

M

Maltby, Edward D., Company 89
McDonald, B. F., Company 97
Metzgar Co. 86

N

National Paint, Varnish and Lacquer Association, Inc. 67
National Supply Co., The 9

O

Oakite Products, Inc. 87

P

Pacific Coast Gas Assn. 93
Pacific Gas & Electric Company 77
Pacific Telephone & Telegraph Co. 85

R

Republic Rubber Division, Lee Rubber & Tire Corp. 10
Revere Copper & Brass, Inc. 59
Ridge Tool Company 79
Rockett Pictures, Incorporated 84
Russell, Burdsall & Ward Bolt & Nut Company 81
Ryerson, Joseph T., & Son, Inc. 30

S

Scientific Lubricants Co. 86
Shell Oil Company, Inc. 28
Shepard Niles Crane and Hoist Corporation 19
Smoot-Holman Co. 17
Stephens-Adamson Mfg. Co. ..... 4th Cover
Stuart Oxygen Company 98

T

Tal Bender, Inc. 88
Tri-State Supply Corporations 96

U

Union Oil Company of California 26
United States Steel Corp. ..... 11 & 20
United States Steel Supply Company 20

W

Western Asbestos Company 79
Western Gear Works 16
White Motor Company 83

Y

Yuba Mfg. Co. 89

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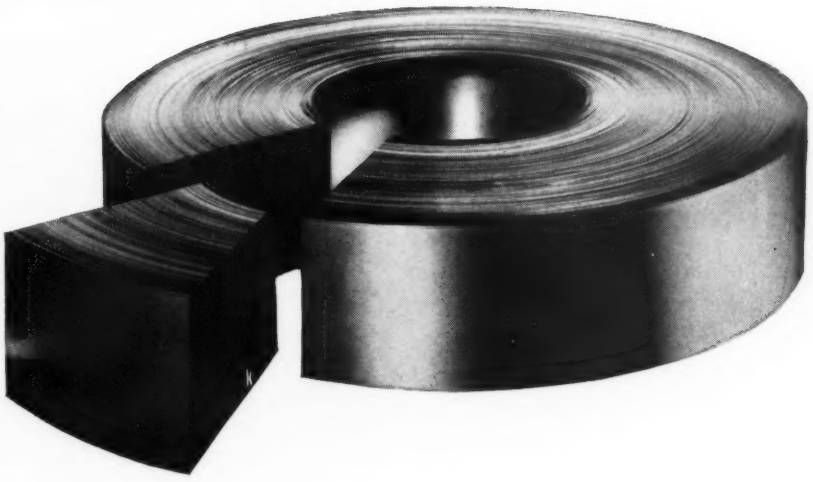

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